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Commodore MAGAZINE

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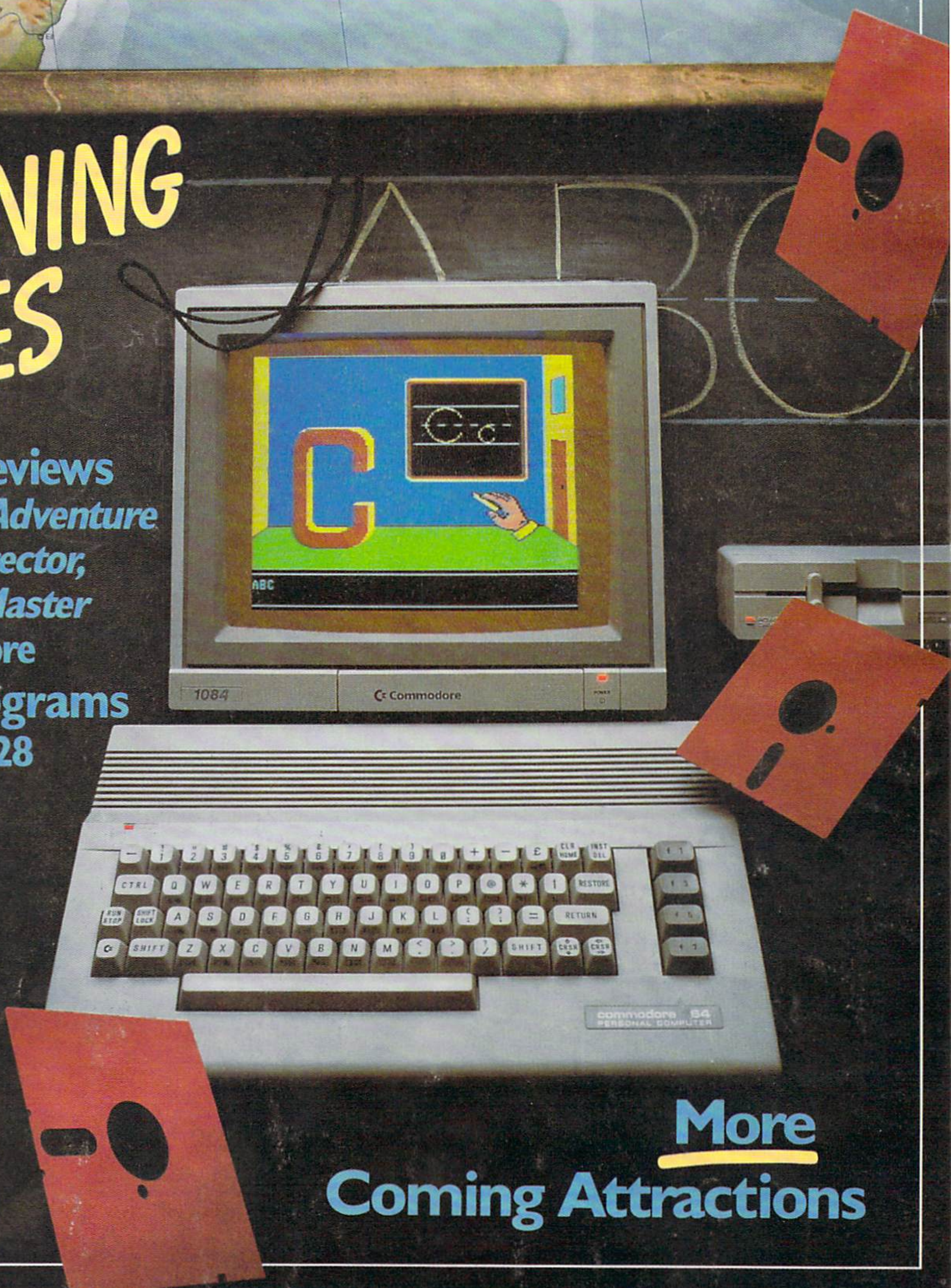
Software Reviews

64 & 128 *Age of Adventure*

AMIGA *The Director, AudioMaster*

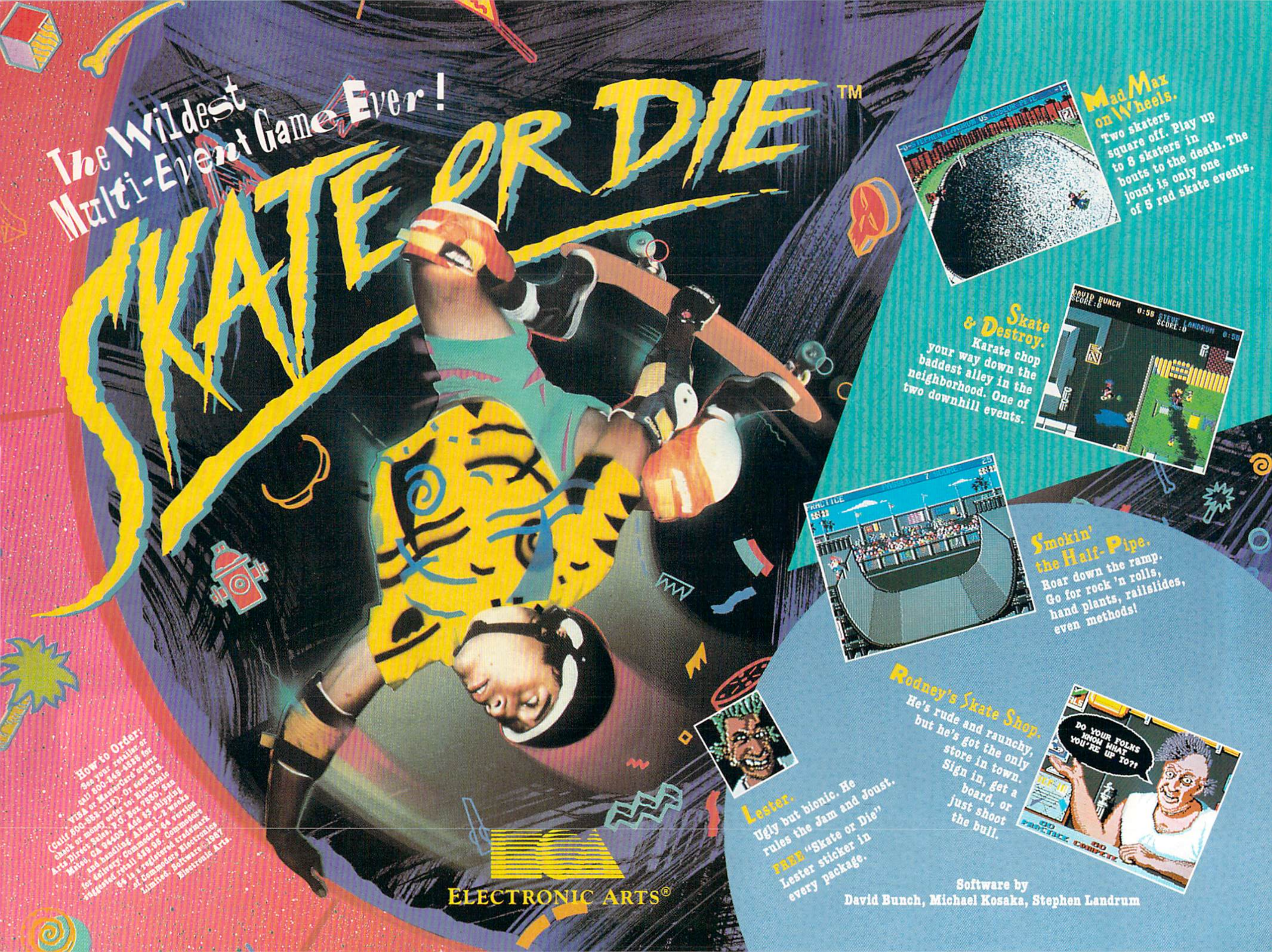
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Commodore

M A G A Z I N E

APRIL 1988, *Volume 9, Number 4*



70



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FEATURES

COVER STORY

COVER PHOTO: *Dennis Degnan*
Software: *Talking Teacher* by Firebird/Rainbird

DEPARTMENTS

To the Editor:

Could you please print something about all the computers Commodore has ever made from the PET to the PC-compatible? You could include the memory, year issued, disk drives compatible, etc. It would help to serve as a buying guide and teach us about little known computers such as the C16, Plus/4, VIC-20, etc.

Sincerely,
Michael Gatto
Los Angeles, CA

Editor's Response: *Because this year marks Commodore's thirtieth anniversary, we thought that it would be appropriate to give a short history of the company.*

Commodore was established in 1958 as a typewriter repair shop in Toronto. The early sixties saw the company's expansion into thermostats, watches and calculators. In 1967 the company introduced the AL1000 electronic calculator at the low, low price of $1495.

In 1976 Commodore acquired MOS Technology and subsequently marketed the first single board computer, the Kim-1. The first PET microcomputer with 8K RAM was introduced at the end of 1976 for under $1000. The PET series eventually included models 2001 (8K), 2016 (16K), 2032 (32K), 4016 (16K), 4032 (32K) and SuperPET (96K).

1980 saw two important product introductions: the 8000 business series of computers with 32K and the first home computer—the VIC-20. The VIC-20, which had built-in 2.0 BASIC and 5K RAM, originally sold for about $300. In 1982 Commodore introduced a new home computer—the Commodore 64—the first 64K computer for under $600. The Commodore 64 was destined to become the world's best-selling home computer. The SX-64, a 27.6 pound "portable" 64, was released in 1983.

In 1984 Commodore introduced the Plus/4 (64K) and C16 (16K). However, since the machines could not run the abundance of available 64 software, the market was underwhelmed.

In 1985 the Commodore 128 was released. The 128 included more memory, better BASIC (7.0), and 64 compatibility. To date the 64/128 family has sold in excess of eight million units worldwide. In 1987 Commodore introduced the 128D with a built-in 5.25-inch disk drive.

Commodore had acquired Amiga Inc. in August 1984, and on July 23, 1985, the long-awaited Amiga Launch took place at Lincoln Center in New York City. The Amiga 1000 was introduced to rave reviews. The first multitasking computer was sold with 256K for $1295.

Last year Commodore introduced two new Amiga models—the Amiga 500 (512K) and the Amiga 2000 (1MB). The Amiga 500 has one 3.5-inch drive and sells for $599. The Amiga 2000, priced at $1995 is internally expandable and can be equipped with an optional Bridgeboard which provides PC-XT compatibility.

PC compatibility is also provided in Commodore's PC line first introduced in the U.S. in late 1986. The PC 10-1 has one 5.25-inch drive; the PC 10-2 comes with two. Both have a slot for a hard drive and 512K internally expandable to 640K. Look for Commodore to make further MS-DOS-compatible releases this year.

	Monitors	Disk Drives	Modems	Printers	Other
PET Series	Built-in	2031, 4040		**4022, 4023**	
8000 Series	Built-in	8050, 8250		**6400, 8023, 8300**	
		9060, 9090 (hard)			
VIC-20	1701, 1702,	1540, 1541	1600, 1650	**Same as 64**	1520 Plotter
			1660		1530 Datassette
					1311 Joystick
Plus/4	**1801, 1802**	**1541, 1551**	1660, 1670	**Same as 64**	**1520 Plotter**
C16			None		**1531 Datassette**
Commodore 64	**1701, 1702,**	1541, 1581	**1600, 1650,**	**1515, 1525,**	1530 Datassette (64 only)
Commodore SX-64	**CM141, 1802,**	1541, 1581	**1660, 1670**	**1526, MPS 801,**	**1520 Plotter**
Commodore 64C	**1802C, 1902**	1541, 1581		**MPS 802,**	**1764 Memory Expansion**
	1902C, 1084			**MPS 803,**	
Commodore 128	**2002**	1541, 1571, 1581		**MPS 1000,**	1750 Memory Expansion
Commodore 128D		1541, 1571, 1581		**MPS 1200,**	(128 only)
				MPS 1250,	**1311 Joystick**
				DPS 1101	**1351 Mouse**
Commodore PC-10	**1901, 1902,**		**1680**	**MPS 1000,**	
Commodore PC-20	**2002, 1084**			**MPS 1250**	
				6400	
Amiga 1000	**1080**	**1010 (3.5")**	**1680**	**MPS 1000,**	**1050 Memory Expansion**
Amiga 500	**2002, 1084**	**1020 (5.25")**		**MPS 1250**	1300 Genlock (1000 only)
Amiga 2000					2088 Bridgeboard
					(2000 only)

Products in **bold** are compatible with all computers listed in that family.

Commodore
M A G A Z I N E

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Contents of Issue #43

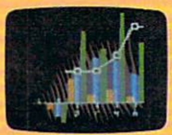
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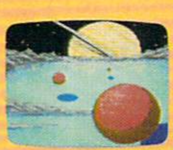
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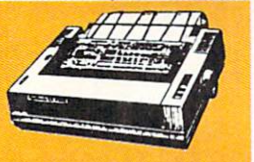
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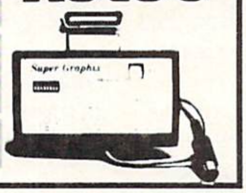
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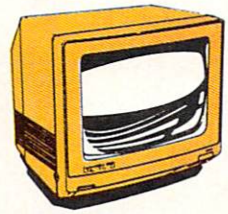
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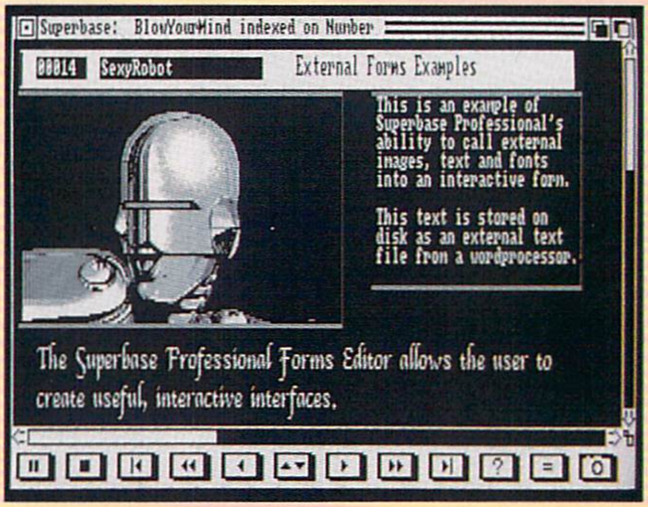
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AmiEXPO



The second AmiEXPO, held in Los Angeles January 15-18, drew over 6000 Amiga enthusiasts and over 50 exhibitors. New products introduced at the show included:

Publishing Partner Professional from Soft Logik Corp. includes a word processor, color and gray scale options, Postscript support, WYSIWYG display and scalable fonts. Suggested retail price is $199.95. For details contact: Soft Logik Corp., 11131 S. Towne Sq., Suite F, St. Louis, MO 63123. Or call: (314) 894-8608.

WordPerfect Corporation released the Amiga version of **WordPerfect Library**, a collection of desktop accessory programs. The package includes Notebook, Calendar, Calculator, File Manager, and Program Editor. **WordPerfect Library** requires 512K and retails for $129. For details contact: WordPerfect Corp., 288 W. Center St., Orem, UT 84057. Phone: (801) 225-5000.

Digital Creations was showing **SuperGen**, a broadcast-quality genlock for Amiga computers. Developed by Progressive Image Technology, **SuperGen** supports the RS170A standard. It also includes three types of fading, two of which are software controllable. Suggested retail price is $749.95. For more information contact: Digital Creations, Inc., 1333 Howe Ave., Suite 208, Sacramento, CA 95825. Or call: (916) 344-4825.

Progressive Peripherals and Software was previewing several new Amiga products in a hotel suite off the show floor.

Superbase Professional, a powerful relational database management system for all Amigas, provides IFF sound/graphics support, a graphic forms editor function, and a text editor that allows mail merge. The program retails for $299.95

FrameGrabber is a real-time video image digitizer that captures color or black and white images in 1/30 of a second. The unit supports screen resolutions up to 640x400 and overscan mode (352x240).

FrameGrabber stores images in IFF format and features a Save Frame option for framing smaller portions of an image. **FrameGrabber** retails for $499.95.

ProGEN is a professional genlock device for the Amiga 500, 1000 or 2000 that meets RS-170A standards. This broadcast-quality device allows users to merge graphics with an outside video source. **ProGEN** is a stand-alone unit which retails for $399.95.

PP&S also previewed the **EXP-8000+**, which adds up to 8MB RAM internally to the Amiga 500. The **EXP-8000+** comes with 2MB RAM on board. An optional 68010 processor and 68881 math coprocessor are also available. Price has not yet been determined. For more information on these new releases contact Progressive Peripherals & Software, Inc., 464 Kalamath St., Denver, CO 80204. Phone: (303) 825-4144.

Syndesis released a program for your Amiga that lets you use *Sculpt 3D* to create objects for *VideoScape 3D*. **Interchange** lets you share objects between the two popular programs from Byte by Byte and Aegis. **Interchange** retails for $49.95. For more information contact: Syndesis, 20 West St., Wilmington, MA 01887. Phone: (617) 657-5585.

Expansion Technologies, introduced **Escort System 500,** a 2MB expansion chassis for the Amiga 500. The modular chassis has its own power supply and provides slots for an optional 20 or 40MB hard drive and 3.5-inch floppy drive. Built to support your Amiga's monitor, the unit retails for $849. For more information contact: Expansion Technologies, 46127 Landing Pkwy., Fremont, CA 94538. Or call: (415) 656-2890.

Dr. T's Music Software introduced **Roland MT-32** and **Roland D-50 Editor/Librarian** programs for the Amiga. These multitasking, mouse-driven programs support standard Amiga MIDI interfaces, and allow you to compare edited patches with the original or with any patch in memory. For details contact: Dr. T's Music Software, 220 Boylston St., Suite 306, Chesnut Hill, MA 02167. Phone: (617) 244-6954.

Aegis Development released **Ports of Call**, a strategic economic simulation in which you are the owner and captain of a Tramp—a cargo ship with no regular schedule. You must take financial and nautical risks as you travel the world seeking cargo. **Ports of Call** retails for $49.95. For further information contact Aegis Development, 2210 Wilshire Blvd., Suite 277, Santa Monica, CA 90403. Phone: (213) 392-9972.

AmiEXPO and Sony Corp. jointly sponsored the **Sony AmiEXPO Theatre** at the show featuring several viewing stations showing a rotating program of Amiga-generated video and graphics. AmiEXPO invites Amiga graphic and video artists to submit their work to the Sony AmiEXPO Theatre to be held in Chicago July 22-24. Interested contributors should contact Steve Jacobs, AmiEXPO, 211 E. 43rd St., New York, NY 10017. Phone: (800) 32-AMIGA or (212) 867-4663.

Improved 3D animation techniques provide dramatically faster frame rates for all cockpit views. Multiple external viewpoints are also available. And Stealth Mission includes complete VOR, ILS, ADF, and DME avionics for cross-country navigation.

Stealth Mission, the ultimate strategic simulation. From SubLOGIC.

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Stealth Mission is available on disk for the Commodore 64/128 computers for the suggested retail price of $49.95. For direct orders please include $2.00 for shipping (outside U.S. $6.25) and specify UPS or first class mail delivery. Visa, MasterCard, American Express, and Diners Club charges accepted.

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Introducing a new generation of strategic gaming excellence from SubLOGIC! Stealth Mission redefines the state of the art in simulation sophistication and playability.

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Stealth Mission lets you fly three different jets; an F-19 Stealth fighter, the experimental forward-swept wing X-29, and a Navy F-14 Tomcat. Different flying techniques and weapons maximize the effectiveness of each aircraft. Even the Stealth fighter can be detected if you're not careful.

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Write & File

Brown-Wagh Publishing has acquired the right to market software products developed by SoftWood Company. Their first release under this agreement is **Write & File** for the Amiga. **Write & File** combines word processing and database management in one package designed for the new Amiga user. The word processor contains features such as a 100,000-word spell checker and a "Document Readability Index" for analyzing writing style. The program requires 1MB and two drives are recommended. Suggested retail price is $99.95. For details contact: Brown-Wagh Publishing, 16795 Lark Ave., Suite 210, Los Gatos, CA 95030. Or call: (408) 395-3838.

Infocomics

Infocom and Tom Snyder Productions are releasing a new series of interactive comics for the Commodore 64. Infocomics allow the player to follow the storyline from various characters' viewpoints with a minimum of effort. There are no complex puzzles to solve or goals to achieve. The stories are augmented with animated "comic book" illustrations and sound. The first three releases in the series are: **Lane Mastodon vs. the Blubbermen**, a Steve Meretzky spoof of early science fiction; **Gamma Force in Pit of a Thousand Screams**, a superhero tale by Amy Briggs; and **ZorkQuest: Assault on Egreth Castle**, Elizabeth Langosy's fantasy adventure about an evil magician manipulating a group of travellers. Each program retails for $12. For more information contact: Infocom, Inc., 125 CambridgePark Dr., Cambridge, MA 02140. Phone: (617)492-6000.

Questron II

Strategic Simulations, Inc. has released the sequel to **Questron**—**Questron II**. This Commodore 64 fantasy adventure takes the player back in time to ensure that the Evil Book of Magic stolen in **Questron** is never created. Suggested retail price is $39.95. An Amiga version is expected for spring release as well. Suggested retail price for the Amiga version will be $49.95. For further details contact: Strategic Simulations, Inc., 1046 N. Rengstorff Ave., Mountain View, CA 94043. Or call: (415) 964-1353.

Navcom 6

Cosmi has announced **Navcom 6: The Gulf Defense** for the Commodore 64. The game simulates a U.S. Navy warship escorting oil tankers through the straits of Hormuz. **Navcom 6** retails for $24.95. For details contact: Cosmi, 415 N. Figueroa St., Wilmington, CA 90744. Phone: (203) 835-9687.

Konami Releases

Konami has released several of its popular arcade games for the Amiga and Commodore 64 computers. They are: **Rush 'N Attack**, **Contra**, **Jackal** and **Boot Camp**. For further information contact: Konami, Inc., 815 Mittel Dr., Wood Dale, IL 60191. Or call: (312) 595-1443.



The President is Missing

Terrorists have taken the President of the U.S. hostage along with several other members of a top-secret economic summit. This is the scene in Cosmi's latest release: **The President is Missing**. You have a cassette tape of the kidnappers' demands and must follow their trail to liberate the President and save the free world. **The President is Missing** retails for $24.95. For more information contact: Cosmi, 415 N. Figueroa St., Wilmington, CA 90744. Or call: (203) 835-9687.

Strike Fleet

The Lucasfilm Games division of Electronic Arts has released **Strike Fleet**, a naval simulation for the Commodore 64 with scenarios based in "hot spots" around the world. **Strike Fleet** is a single-player game which incorporates ten missions. The player carefully chooses a fleet of up to 16 vessels and four helicopters based upon the objectives of each individual mission. Suggested retail price is $29.95. For further information contact: Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. Or call: (415) 571-7171.

High Seas

Gardé Games of Distinction has released **High Seas** for the Commodore 64. Players can challenge the computer or a human opponent in one-on-one skirmishes or engagements between entire fleets. **High Seas** requires the player to master the art of sailing and provides instrument readouts for wind velocity and heading, ship's speed, and target ranges. Reports are provided on crew status, damage, guns and targets. A tutorial and ship editor are included. **High Seas** sells for $49.95. For more information contact: Gardé Games of Distinction, 8 Bishop Lane, Madison, CT 06443. Phone: (203) 245-9089.

The Super Chips

Free Spirit Software, Inc. has announced a custom operating system for the Commodore 128 called **The Super Chips**. Consisting of three 16K chips that replace chips on the 128's



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motherboard, **The Super Chips** add new commands and functions to the 128. These include: COMBINE, MERGE, CHANGE, FIND, UNNEW and EDITOR. **The Super Chips** are available for $49.95 from: Free Spirit Software, Inc., 905 W. Hilligrove, Suite 6, LaGrange, IL 60525. For information call: (312) 352-7323.

Becker-BASIC

Abacus' latest release is an add-on software package for GEOS users—**BeckerBASIC**. The program includes commands for screen and cursor control, hi-res graphics and sprite animation, sound and music and programmer's aids. **BeckerBASIC** is compatible with Commodore BASIC 2.0 and GEOS version 1.3 and retails for $49.95. For details contact: Abacus, 5370 52nd St. SE, Grand Rapids, MI 49508. Phone: (616) 698-0330.

Secret of the Inner Sanctum

Activision is releasing **Book One: Secret of the Inner Sanctum** from its Might and Magic series for the Commodore 64. This fantasy role-playing game allows players to guide a party of six adventurers to explore the Land of Varn searching for the Inner Sanctum. Over 200 monsters, 94 magic spells and 250 magic items can be found in **Secret of the Inner Sanctum**. Suggested retail price is $39.95. For further details contact: Activision, Inc., 2350 Bayshore Parkway, Mountain View, CA 94043. Phone: (415) 960-0410.

Toll-Free Directory

AT&T's Toll-Free 800 Directory Business Edition includes over 30 pages of toll-free numbers for firms offering computer-related services. The **Toll-Free 800 Directory** Business Edition is available from AT&T for $14.95. A Consumer Edition of the directory is also available for $9.95. For more information call (800) 426-8686 ext. 222.



Microline 183

Okidata has introduced a new wide-carriage, near letter quality personal printer for the home office. **Microline 183**, which is equipped with a tractor feed and a friction feed platen, prints at 120 cps in utility mode, 60 cps in emphasized and enhanced mode, and 30 cps in near letter quality mode. The printer allows several print style options including italics, enhanced, emphasized, super/subscripts, and underlining and can produce double-density bit-image graphics. **Microline 183** comes with a parallel interface (serial interface optional) and retails for $399. For details contact: Okidata, 532 Fellowship Rd., Mount Laurel, NJ 08054. Or call: (609) 235-2600.



ProWrite Enhanced

New Horizons Software has released an enhanced version of **ProWrite**, their Amiga word processor. New additions include: faster graphics printing, sideways printing, a built-in 95,000-word spelling checker, resizing capability for graphics and support for HAM pictures. The new version also allows the user to set the default start-up parameters, including font, justification, spacing and colors. All registered owners will be notified of the upgrade (version 2.0), which will cost $20. **ProWrite 2.0** retails for $124.95. For more information contact: New Horizons Software, P.O. Box 43167, Austin, TX 78745. Phone: (512) 328-6650.

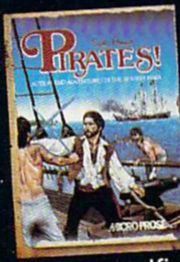
Inner Connection Drive

Inner Connection, Inc. has introduced a 20MB 5.25-inch Bernoulli drive with SCSI controller for the Amiga 2000. This is the first of a series of peripherals Inner Connection has planned for the Amiga. The Bernoulli drive, manufactured by IOmega, claims a number of advantages over traditional megafloppy or hard disk drives. There are no head crashes and access time is faster than most hard drives. Utilizing cartridge data management, the drive retails for $1695 ($1795 for the Amiga 1000). For more information contact: Inner Connection, Inc., 12310 Brandywine Rd., Brandywine, MD 20613. Or call: (301) 372-8071.

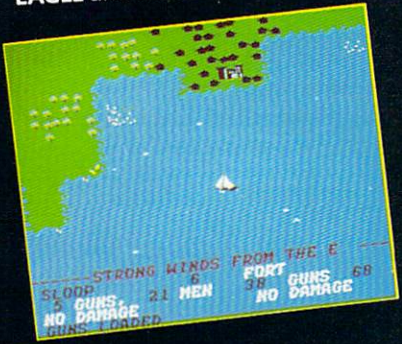
DARE TO BE DIFFERENT

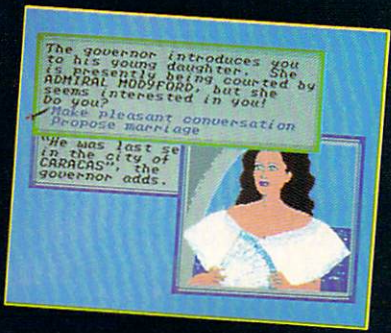
Hot New Simulations From The Computer Craftsmen At MicroProse

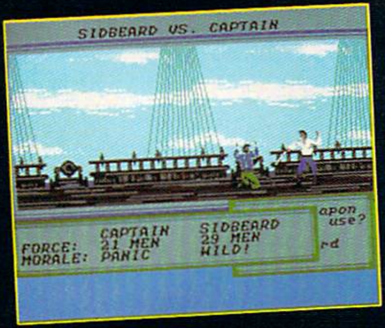
High Seas Adventure



Relive the swashbuckling era of the buccaneer as a 17th century privateer captain in **PIRATES!** It's a unique gaming blend of simulation, adventure and role-playing. You'll swordfight with other ship captains, storm the fortress of a wealthy town, explore the Caribbean, and search for lost treasure. The goal: amass a fortune, gain a reputation, and retire to a life of luxury. From award-winning game designer Sid Meier, of F-15 **STRIKE EAGLE** and **SILENT SERVICE** fame.



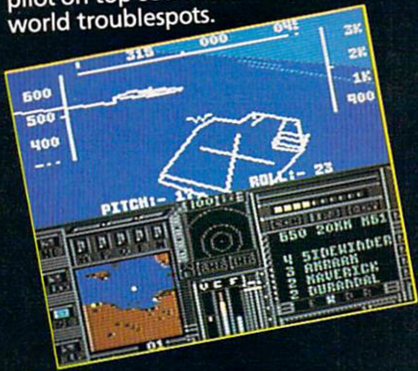


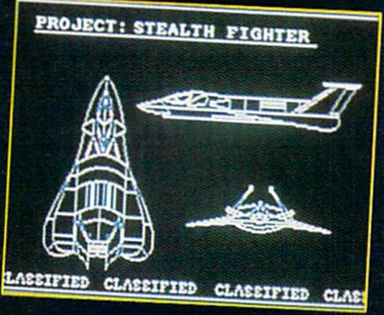


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Compiled by Louis F. Sander

Lou Sander's Tips & Tricks

Trick Writer's Guide: Every month, readers submit hundreds of items to this column, but we only have space for about twenty. Getting your own idea into print takes a combination of knowledge, skill and good luck, but every month a lot of people have that combination. If you follow these suggestions when submitting your tricks, you'll increase your chances for success:

- I seek hardware and programming hints, short programs or subroutines, ideas for a better computer room and similar items of value to Commodore computerists.
- Tricks are selected on the basis of usefulness, originality, and ease of implementation by our readers.
- Items must be brief. Try to fit your ideas onto a single sheet at most, a half sheet if possible. Our best contributors are masters of condensation and brevity, and they seldom send anything longer than a page and a half.
- Put each trick on a separate sheet of paper, and put your name and address on each sheet.
- Program listings should fit onto a single 40-column screen if possible. All but the shortest programs should be submitted in disk form as well as on a listing.
- I read every submission, but I give closest attention to those that come double-spaced from your printer or typewriter. You can help yourself by sending your tricks in that form.
- Due to the large volume of mail, I can't acknowledge receipt of your material, and I can't return rejected material to you. Neither can I return your disks. (I give the extras to needy youthful programmers).
- If your trick is accepted, you'll get a check when it appears in print, which is never less than 90 days from the time I receive it. I typically pay $10 for tricks, but the best ones get up to $50. The main benefit of having a trick accepted is not the money you get, but the satisfaction of knowing that your ideas are helpful to others. It's also a thrill to see your name in *Commodore Magazine*, which is avidly read by people all over the world.
- Put all your tricks in a business envelope and mail them to:

Louis F. Sander
Post Office Box 101011
Pittsburgh, PA 15237

64 Defensive Driving game: Actually, you're defensively driving a space ship in this one, and it's a real winner. The action is so good that it upstaged my family's favorite commercial software for a time.

Your ship is the little blue block in the center of the screen, and you move it from side to side to avoid the onslaught of enemy missiles. The longer you survive, the higher your score. Nobody survives very long. Your controls are as follows: SHIFT—Go straight, COMMODORE—Turn right, CONTROL—Teleport to right, No Keys—Turn left. When you move off the right side of the screen, you move one line closer to the bottom, which gives you less time to react. Moving off to the left moves you one line closer to the top. Touching the top or bottom of the screen will kill you.

Watch out for the teleport! If you land on a missile, you're dead. If you survive, (which is likely), you must hold down the CTRL key to give your ship time to adjust.

Because of the superfast action involved, most games are very short. Fortunately, a single keypress gets you another one.
Steve Harney
El Paso, TX

```
100 REM 64 DEFENSIVE DRIVING-S. HARNEY
110 PRINT CHR$(158);CHR$(142);CHR$(8)
120 POKE 53280,0:POKE 53281,0
130 PRINT"[CLEAR]":FOR J=1 TO 50:PRINT
    :NEXT
140 B=32:C=54272:L=1524:T=TI:X=39
150 POKE L,120:POKE C+L,14:H=RND(1)*X
160 PRINT TAB(H);"[UP ARROW]"
    :L=L+PEEK(653)*2-2
170 IF PEEK(L)=B THEN 150
180 POKE L,43
190 S=TI-T:POKE 54296,15:POKE 54296,0
200 PRINT "[DOWN,SPACE2]SCORE=";S
210 IF S>HS THEN HS=S
220 PRINT "[DOWN]HISCORE=";HS
230 PRINT "[DOWN]PRESS STOP TO QUIT,
    OR"
240 PRINT "PRESS SPACE TO TRY
    AGAIN..."
250 WAIT 197,5
260 GOTO 130
```

GEOS form factors: When using GEOS, the printed output is slightly shorter than what is shown on the screen. As a consequence, drawings become squashed and out of proportion. To fix this, just adjust the vertical height on your monitor until the

Continued on page 117

ThunderChopper

Introducing ThunderChopper, the new standard of excellence in helicopter simulation! ThunderChopper combines SubLOGIC graphics technology with strategies and tactics by Colonel Jack Rosenow, USAF (Ret.). This simulator truly was a labor of love for the Colonel:

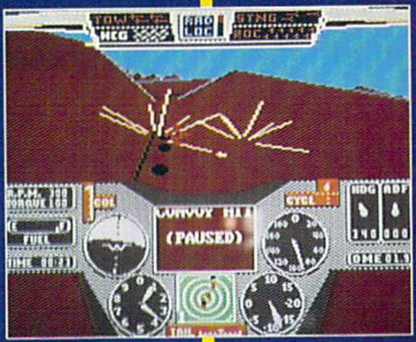
"I'm a chopper pilot with over 9,000 hours of flight time. Let me put you at the controls of an advanced Hughes 530MG Defender. No other helicopter simulator is as responsive to your control input, or as satisfying to fly. Start yourself out on the flight training grounds. My concise documentation will have you flying in minutes.

"Once you've attained a level of flying proficiency, you're ready to train for one of the most important duties a helicopter pilot can perform - the location and rescue of downed pilots.

"After you've mastered flight and rescue techniques you're ready for combat. Multiple scenarios let you test your skills under a variety of combat conditions. Escort ground troops through enemy territory. Or rescue the survivors of a major sea battle. You'll have to become adept at selecting and controlling your ordnance, and at using sophisticated electronic weapon/defense systems to locate, identify, and destroy enemy targets.

"ThunderChopper is the most realistic helicopter simulation you'll ever fly. Try ThunderChopper - the excellence comes through."

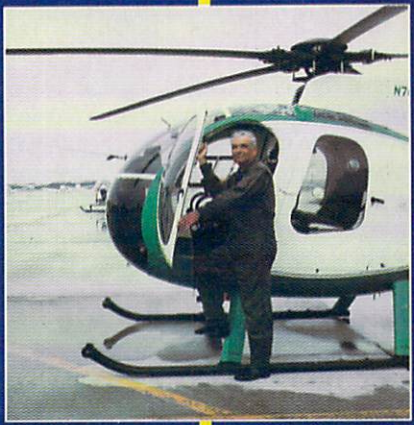
Colonel John B. Rosenow, USAF (Ret.)
President, ActionSoft Corp.



Rescue Mission - scan for flares

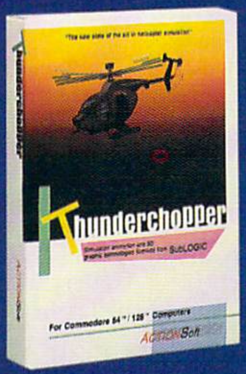


Escort troops through enemy territory - search and destroy enemy targets



Colonel Jack provided the strategy and tactics for ThunderChopper





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Or write or call for more information. ThunderChopper is available on disk for the Commodore 64/128 and Apple II computers. For direct orders please indicate which computer version you want. Enclose $29.95 plus $2.00 for shipping (outside U.S. $6.95) and specify UPS or first class mail delivery. Visa, MasterCard, American Express, and Diners Club charges accepted.

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Amiga Tips & Tricks

Compiled by Tim Jones

Each month in Amiga Tips and Tricks we offer tidbits, teasers or program examples. If you have an item you would like to submit for use, send it to:

Commodore Amiga Tips
651 Outrigger Dr.
Deltona, FL 32738

If we use your tip or program example, we will pay you between $10 and $50.

More Keyboard Shortcuts: In reference to Bob Stevens' tip in the November 1987 issue, while playing with his shortcuts I discovered the following:

RIGHT-ALT-AMIGA—Right Mouse Button (Menu)
ALT-COMMODORE/AMIGA—Left Mouse Button (Select)
EITHER-AMIGA-CURSOR KEY(any)—Move Pointer In Key Direction

These can all be used in conjunction with one another to duplicate any mouse function. For example: Use RIGHT-ALT-AMIGA to drop the menus, then (holding down what you have) press an arrow key to move the pointer to the appropriate menu and then down to select an Item. In the event of a multi-choice type menu, you can also add a LEFT-ALT-COMMODORE/AMIGA for instant select.
Don Balbo
Chino Valley, CA

Keyboard Shortcuts, Part 2: In addition to the examples that Bob Stevens listed as keyboard alternatives in your November '87 installment, I found the following two for Kickstart/Workbench V1.2 users. When a requester appears with two choices (usually OK and CANCEL), you can use the LEFT-COMMODORE/AMIGA-V to select the left button or LEFT-COMMODORE/AMIGA-B to select the right button. No more going for the mouse in the middle of a word processing session to tell the system to retry to load your file when the proper disk has been re-inserted.
Jerry Mihngus
Silver Spring, MD

[Okay, mouse haters, here are some answers! - taj]

Printer Status Check: If you write programs in AmigaBASIC that use the printer, you have probably found yourself hung up due to the printer being off line or turned off. Here is a simple routine that will check to see if the printer is ready.

```
SUB PChk STATIC
Chk:
LOCATE10,10
IF PEEK(12570624&) AND 1 THEN PRINT "Check Printer"
IF NOT PEEK(12570624&) AND 1 THEN EXIT SUB
GOTO Chk
END SUB
```

You should call this routine any time you are going to be sending something to your printer from BASIC. Simply issue the command PChk or CALL PChk and then handle the result in any manner you feel necessary. You could create a requester that would alert the user and then go away when the printer was set.
Frank Turner
Santa Cruz, CA

[This will only work for PARALLEL printers as it checks the PIA address that corresponds to the parallel printer port signals. - taj]

EXT 1902 Upgrade for RGB Use: Owners of the Commodore 1902 monitor who wish to use it with their Amiga can upgrade the 1902 to accept Analog RGB input (i.e., turn the 1902 into a 1080) by installing jumpers at positions JM123, JM124 and JM125 on the main circuit board and setting the rear switch position to analog RGB. The jumper positions are clearly marked on the circuit board under the shield below the power cord connector. Installation of the jumpers requires the removal of the upper and lower shields, locating the proper positions and soldering the jumpers in place.

Due to the dangerous voltages that may be present even when the unit is unplugged and the chance of doing great damage to the monitor by a slight miscue, only those experienced in this type of modification should attempt it.

For most people, it would be wisest to have your local Commodore Authorized Service Center do it. Once the jumpers are installed, you will also need an Amiga video cable (CBM part #328192-02, Retail $33.20) and an audio cable (CBM part #327284-01, Retail $3.35). I am not sure if this will work with a 1902A.
R. Hughes
Manchester, MO


"You're pond scum, McGibbits!"
THE MAD LEADER
Infiltrator II
by Chris Gray
Fly your Gizmo™ DHX-1 Attack Chopper to three totally new, totally challenging ground missions. Can you hack it, Johnny "Jimbo" McGibbits?
MINDSCAPE
STICK IT TO THE MAD LEADER 3 NEW WAYS
Jimbo Baby McGibbits is back—in Infiltrator II—where you'll find two of the hottest action categories: combat helicopter simulation and three new military adventures.
Step into Jimbo Baby's boots and get back into the action—where action means neutralizing a deadly nerve gas, nullifying a few neutron bombs and subtracting one Mad Leader from this old globe.
Feeling up to it, Jimbo? Or have those five course meals and fancy dolls turned your mind to mush?
MINDSCAPE INC
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Visit your retailer or call 1-800-221-9884 for VISA and MasterCard orders. To purchase by mail, send your card number and expiration date, check or money order for $29.95 (Apple II family, IBM & compatibles and C64 & C128) plus $3.00 handling to Mindscape, Inc., P.O. Box 1167, Northbrook, IL 60065. Allow 3-5 weeks for delivery. Lawyers like this part. © 1987 Mindscape, Inc. Mindscape is a trademark of Mindscape, Inc. Apple, IBM and Commodore are registered Trademarks of Apple Computer, Inc., International Business Machine and Commodore Electronics, Ltd., respectively.

SCIENTISTS
STOP THE AGI

Time passes. Things get old. Let's face it, even Willie Mays retired. So there's no way your Commodore can compete with a newer machine, right?

Wrong.

The fact is that there's actually more power in your Commodore 64 or 128 than when you bought it. All you need is GEOS or GEOS 128 to find it.

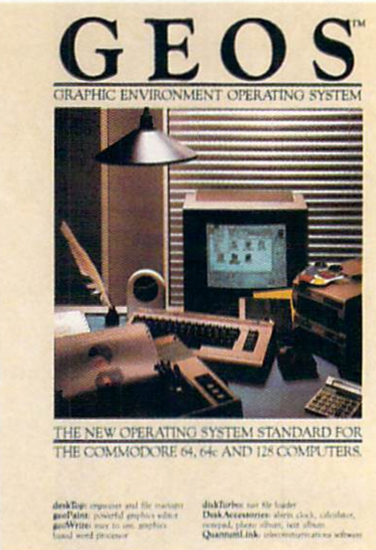
GEOS is the revolutionary operating system that works your hardware up to seven times harder than it's ever worked before. Loading. Processing. Accessing information. All at the mere touch of a mouse or joystick.

Time Warps Discovered

With GEOS, everything speeds up. Including you. Because the system is incredibly fast and ridiculously easy to learn: GEOS shows you options, you point at what you want and click your mouse.

End of lesson.

Now, once you know that, you know how every other GEOS application works, too. Like geoWrite, which lets you punch up paragraphs with five different fonts. Or geoPaint, which dresses up diagrams with an arsenal of artistic appliances. Both are built right into the GEOS disk. And when you put them together with geoWrite Workshop's LaserWriter compatibility, every new GEOS document comes out looking like an old master.





GEOPUBLISH

NEW The desktop publishing program that lets you design formats, column widths and page layouts. Accepts any geoWrite text and converts non-GEOS text. Wraps text around graphics automatically. Headline fonts up to 192 pt. Complete graphics toolbox.



GEOCALC

The GEOS-compatible, number-crunching spreadsheet for tracking and analyzing numerical data. Create your own formulas, perform calculations for anything from simple geometry to "what if" cost projections.



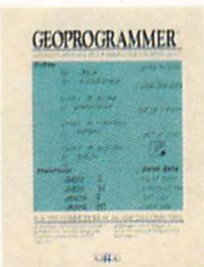
GEOWRITE WORKSHOP

NEW All the GEOS-compatible tools a writer needs, including new geoWrite 2.1 with headers, footers, margins to 8" and features to justify, center, search and replace text. Includes a Text Grabber (for converting text from programs like Paper Clip), geoMerge and LaserWriter printing capability.



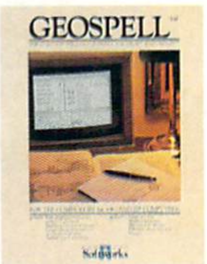
GEOFILE

The GEOS-compatible database manager that sorts, edits and prioritizes whatever data you feed it. You fill out the "input form," specify your command, and geoFile takes it from there.



GEOPROGRAMMER

NEW A programmer's dream for writing your own programs or supercharging someone else's. With easy yet mind-boggling features like graphics that insert by simply cutting and pasting directly from geoPaint. Comes with geoAssembler, geoLink and geoDebugger for modular assembly and testing.



GEOSPELL

NEW Over 28,000 word geoDictionary for checking spelling. Lets you add words, switch dictionaries, edit, and automatically search and replace. Customize and create fonts up to 48 pt. with geoFont.

AT BERKELEY
NG PROCESS!

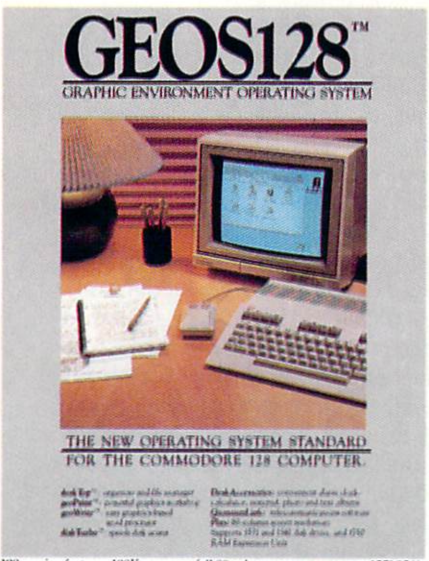
Avoid Old Age Forever!

But how does all this affect your Commodore's future? Well, it means you don't ever have to worry about it becoming obsolete, because there are all kinds of GEOS applications for almost every purpose.

You can finally get organized with geoFile, the database that searches, finds and lists almost anything that you want to search, find and list. You can manipulate mathematics or figure out financial formulas with geoCalc. If writing's your style, geoWrite Workshop can help you hammer out any kind of report. And geoPublish is the desktop publishing program that is still making headlines throughout the entire industry.

Of course, that's merely a sampling of what the GEOS environment has to offer. Because even as you read this, legions of our engineers are hard at work, developing even more GEOS applications for even more uses.

All of which means you get a whole lot more out of your Commodore than you ever bargained for. And while that may not actually keep your Commodore from getting older, that's certainly something it could live with for a long, long time.



128 version features 128K memory, full 80 column screen, supports 1571/1581 disk drives. 1750 RAM expansion and runs at a full 2 MHz for lightning speed.

Berkeley Softworks

The brightest minds are working at Berkeley.



DESKPACK

NEW Six GEOS-compatible applications: Graphics Grabber for importing art from Print Shop,™ Newsroom™ and Print Master™ graphics; Calendar; Icon Editor and Black Jack Dealer. Now includes geoDex, the GEOS-compatible directory that allows you to create lists by name, address, phone number, and geoMerge to customize form letters and invitations. In either 40 or 80 col. mode.



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GEOFILE 128

NEW The GEOS-compatible database manager that sorts, edits and prioritizes whatever data you feed it. You fill out the "input form," specify your command, and geoFile takes it from there. 128 version features full 80 column screen. Due soon!



GEOWRITE WORKSHOP 128

NEW All the GEOS-compatible tools a writer needs, including geoWrite 2.1 with headers, footers, margins to 8" across and features to justify, center, search and replace text. Includes a Text Grabber (for converting text from programs like Paper Clip), geoMerge and LaserWriter printing capability. Features full 80 column screen.



GEOCALC 128

NEW The GEOS-compatible, number-crunching spreadsheet for tracking and analyzing numerical data. Create your own formulas, perform calculations for anything from simple geometry to "what if" cost projections. 128 version features full 80 column screen. Due soon!

To order call
1-800-443-0100
ext. 234

Reviewed by Mark Cotone

Age of Adventure

Computer: Commodore 64
Publisher: Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
Medium: Disk
Price: $14.99

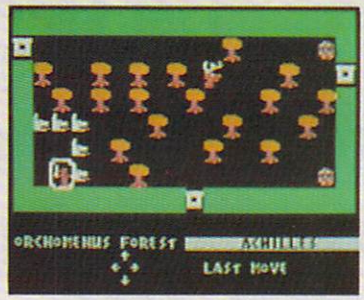
Role-playing adventure games have never looked better. With visual masterpieces like *The Bard's Tale* series and *Legacy of the Ancients*, Electronic Arts is currently gracing the screens with imaginary lands unparalleled in brilliant visual detail. Why then, you may ask, are these same publishers following up these state-of-the-art offerings with Stuart Smith's *Age of Adventure*, a package containing a pair of programs originally released for other systems as far back as 1981?

In my estimation, the answer is twofold. First is a matter of respect. While dramatic advancements have inarguably been made in this genre's graphic quality, when you stop to strip away the polished chassis, you are left with contest mechanics that have changed very little over the past decade. The playing parameters of the quests and the makeup of the characters they involve have basically remained constant. So even in the relatively short history of computer games, the two contests that this package offers—"The Return of Heracles" and "Ali Baba and the Forty Thieves"—might be considered classics in that they helped to establish an early computerized standard of the Dungeons and Dragons role-playing format. For a nominal fee, adventuring newcomers now have the chance to step back and examine the roots of this popular game style.

With all reverence aside, I believe the second and more important reason for this adventure pairing is a matter of astute business sense. Electronic Arts has built a solid reputation and loyal following by consistently providing quality products, and with this package they have not wavered. These games, aside from being old, are darn good.

Ali Baba and the Forty Thieves

"Ali Baba and the Forty Thieves" begins with the title character being awakened from his tent by cries of despair from the Sultan Shahriar's nearby palace. A



For a nominal fee, adventuring newcomers now have the chance to step back and examine the roots of this popular game style.

tragedy has struck this ruler's domain. His daughter, the Princess Buddir al-Buddoor, has been kidnapped by a pack of ruthless thieves, who have dragged her away to the evil darkness of the perilous mountain depths. While most have given her up for dead, the Sultan refuses to relinquish hope, and in an act of desperation, promises a lifetime of riches to the warrior who can rescue his daughter and return her to the safety of the palace. So, with loyalty and greed as your motivators, the quest begins.

Your search party consists of Ali Baba and any or all of eighteen additional characters who are ready and hot for the hunt. These potential heroes come from four distinct races—Human, Elf, Dwarf and Halfling—each with his own attribute rating to outline individual luck, weapons ability, strength and dexterity. Every character is a unique being, independently moving, fighting and contributing to the cause with whatever specific skills he embodies. Depending upon the number of players gathered around your Commodore and the number of surrogates that each will take under his control, the intrepid band can range anywhere from a glacial gang of nineteen to a solitary, soon to be snuffed, single sepoy.

The initially uncharted terrain on this search is uncovered in sections as the characters press forward. The entire quest consists of 62 different locations, or "rooms," each filled with its own assortment of magic, messages, treasures and traps. In addition, there are over 100 monsters to be approached or avoided, ranging from a scampering rat to a ravenous dragon. Your heroes always have the option to run from such trouble, but to obtain the well-guarded pieces of this vast puzzle, they will often have to stand and fight. The outcome of battle depends on the number of attackers on each side, the strength of each character involved, and the weapons and armor with which they're equipped. One by one, combatants take turns swiping at each other, with hits, misses and damage reports conveyed on the screen's message board. When a skirmish is resolved, vanquished characters are removed from play, and survivors can recuperate, regroup, and carry on.

The arduous search for the Princess makes for captivating play. You'll find yourself treating each party member as a true individual, delegating different responsibilities as they slowly pick their way through clues, building strength and momentum on the way to the enemy's lair. As you step into the unknown, teamed together to fight with and for one another, you'll even feel yourself becoming somewhat attached to your gallant gang, actually missing any member who happens to fall victim to a villain's blade.

A number of player options have been incorporated to allow you to tailor the difficulty of the contest based on your past adventure experience. Most notable are the "Add a Character" privilege, which allows you to bring a new character on the scene at any time, even if it means resurrecting a dearly departed, and the variable "Danger" setting, which lets you adjust the number of enemy characters you'll encounter along your travels. This way, if the going gets tough, the not-so-tough can make the going a little easier.

In the end, when the Princess is finally saved and you're up to your navel in gold nuggets, your next exciting adventure is only a disk flip away.

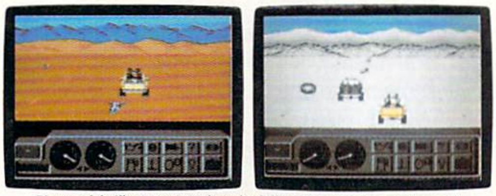
The Return of Heracles

If you like Ali and his thieves, you're going to love "The Return of Heracles," the same style contest in a different and more difficult environment. The setting is mythical Greece, where you, stepping into the sandals of one or more of the ancient Greek heroes, must try to satisfy the demands of the great and powerful Zeus. The screen layout, command control system, character ratings breakdown, difficulty options and methods of battle are similar if not identical to those incorporated in the Ali Baba contest. But this game adds a few interesting twists of its own,

Continued on page 111



Get ready for four of the most challenging, rugged, rump-bumping cross



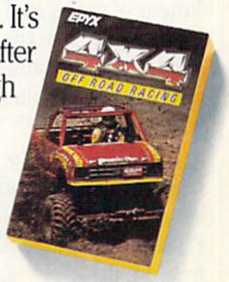
Plenty of thrills guaranteed on the following grounds: gumbo mud, packed snow, skid-sand, and the scrubbiest terrain south of the border.

country road racing courses this earth has to offer.

Fight the torturous terrain of Baja. Rocks, boulders, skid-sand, even a few spikey cactuses. And of course, heat that's hot enough to fillet any forehead. Ever had your hands stuck to the wheel? Permanently. You will when you endure the longest winter of your life in the ice, sleet and slosh of The Michigan Course. The Georgia Red Clay Course has enough mud to keep you a human fossil for 2,000 years. And then there's Death Valley. Get it. D-E-A-T-H Valley.

Start with pre-race strategy. Select and customize your personal vehicle. Your supplies. Your repair equipment. Believe us. You'll need everything. There are boulders, rivers, potholes, and mudbogs to contend with. What are mudbogs? You'll find out. (Just after you find out there's a Demon 4 x 4 chasing you all through the race. A Demon hellbent on your destruction.)

If you win enough races, collect enough points, only then will the Victor's Cup be yours. It's the least we can do. After all, you did go through hell to get there.



4x4 OFF-ROAD RACING
BY EPYX

Commodore 64/128, IBM & compatibles, Amiga

Reviewed by Russ Ceccola

Plundered Hearts

Computer: Commodore 64
Publisher: Infocom
125 CambridgePark Dr.
Cambridge, MA 02140
Medium: Disk
Price: $34.95



If you're a male reader, have you ever secretly wondered what it's really like to be a woman? If female, have you ever aspired to being a heroine or damsel in distress in a great adventure? Perhaps life on the high seas in the seventeenth century, traveling with pirates might appeal to you? Well, shiver me timbers, a fine young lass from Infocom has put all three fantasies on disk in a new game called *Plundered Hearts*. Amy Briggs, the newest member of Infocom's select group of infamous implementors, has spun a tale of intrigue and romance set in the times when pirates ruled the seas and adventures were everyday events.

Plundered Hearts is the first of its kind in a lot of ways for Infocom games. It is the first game heavily based on romance published by the Cambridge-based company. It is also the first of their games to deal with pirates and the time period in which they lived. Amy Briggs is the first female game designer hired by Infocom, and *Plundered Hearts* is a very good first project on her part. Most importantly, the game is the first in which the main character in the story, whose identity you assume, is a woman. The perspective taken by Briggs was a daring move for Infocom that worked out rather well.

The plot of *Plundered Hearts* involves a lot of different elements. The story goes something like this: You have been informed via letter from Jean Lafond, Governor of St. Sinistra—an island in the Caribbean, that your beloved father is in danger of dying and that he needs your support and love to survive and recover. Lafond has sent his flagship, the Lafond Deux, to escort you to St. Sinistra and your ailing father.

Along the way to your destination, the Lafond Deux is attacked, raided and boarded by Nicholas Jamison, a.k.a. "The Falcon," a pirate of the seas who saves you from an attack by an unruly and love-hungry villainous crew member. Upon setting eyes on Jamison, your heart soars and your emotions go wild. The problem in your predicament is that you still have to save your father before you can think about yourself. After swooning, you wake up and find yourself in Jamison's ship, the Helena Louise, off the coast of St. Sinistra.

So close to papa, but yet so far! You learn through character dialogue and by talking to Jamison that he is really on your side and was sent to protect you by your father. But who is he protecting you from, and what is his interest in the whole matter? Surely he is not merely concerned about you and your father's fate. What lies ahead is a challenging adventure, calling upon all of your skills and intuition, in which you must make your way to your father and discover the truth behind all of the information that you know while at the same time tending to your "plundered heart."

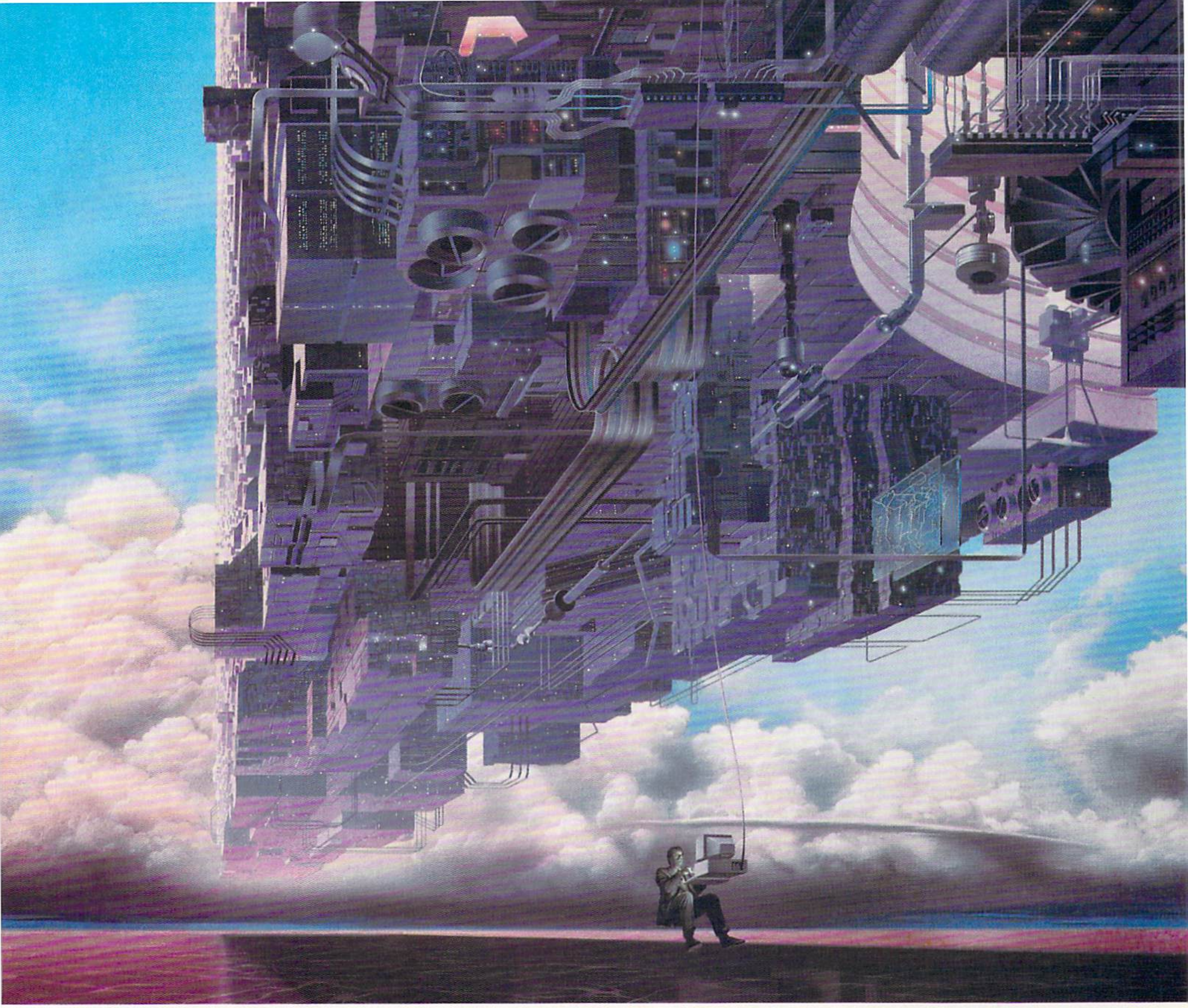
It is very hard to classify *Plundered Hearts* into a certain genre. In a recent interview with the author, I was given the best description I have yet to hear. Briggs said, "*Plundered Hearts* is both a romance and an adventure. If you compare it to the novels that you see in supermarket checkout lines, then it's more adventursome. But, if you compare it to other Infocom games, then it's more romantic. So, it ultimately is a romantic adventure."

Briggs is an avid reader and began her research reading for *Plundered Hearts* before Infocom even existed. As a teenager, she read only romance novels. Briggs also has a strong interest in historical fiction and was reading some of that when she started *Plundered Hearts*: "I was reading a long series of books of historical fiction by Dorothy Dunnett. Each book is large and verbose, and I used that style of writing in the game. Unfortunately, I had to go back and cut most of that, because that type of writing doesn't lend itself well to the kind of games that Infocom puts out."

Because of her extensive reading throughout her life, the only research that Briggs had to do was "pirate research." She related, "I ordered some historical costume books and focused on the time of the story. I researched pirates, both legendary and real, by seeing Errol Flynn movies and reading about them in the library." This research has indeed paid off, for in "reading" the prosaic style of *Plundered Hearts* you can see the amount of time that Briggs put into the game by her choice of words and language. For example, if you hit the RETURN key without typing anything in, the game responds, "Prithee, Pardon?"

The characters and names in *Plundered Hearts* are well developed and add to the

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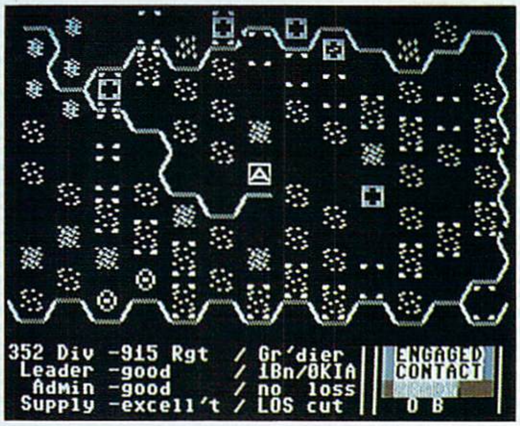


Reviewed by Russ Ceccola

Battles in Normandy

Computer: Commodore 64
Publisher: Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
Medium: Disk
Price: $39.95

Don't expect a 1000-page manual, ten-disk game that takes three weeks to learn and two days to play.



It's very hard to find a good, solid war game in today's deluged market. *Battles in Normandy*, a new game created by the Strategic Studies Group (SSG) of Australia and distributed in America exclusively by Electronic Arts, contains everything an avid war gamer like myself expects in a game without any of the boring overhead. Don't expect a 1000-page manual, ten-disk game that takes three weeks to learn and two days to play. *Battles in Normandy* has an 80-page manual (large type and many pictures) that takes three hours to learn and can be played in full in as short a game as 15 minutes.

I am very skeptical when I pick up a new war game, particularly because I hated history throughout my school years and couldn't care less whether Hitler had 12 Panzers or 13 Panzers on Utah Beach in 1944. When a game gets that detailed, you might as well expect to dedicate more than a couple of weeks' time to fully appreciating it—and what good is it if the initial thrill of opening a game's box is gone? Instead, *Battles in Normandy* whacked me over the head with its incredible power and didn't sedate me with boring statistics or "realism factors" that translate to "doldrum factors."

Battles in Normandy continues in the great tradition of its predecessor, *Battlefront*. It is officially a sequel to *Battlefront* and uses the same system of play. This system includes: an easy-to-use, menu-driven system, a large, detailed game map, two command cards that depict all of the menus and how they connect to each other, a design option that allows full creative control over new scenarios as well as modifying existing ones, a complete manual and even customized labels for your save disks. The best part about all of these options is that they are simple to use and actually aid you in playing the game.

Battles in Normandy recreates in excruciating detail the battle that took place on the Normandy peninsula between the Allied and Axis powers in June and July of 1944. There are eight pre-made scenarios that you can play on the disk: Omaha, Utah, Sword, Cherbourg, Carentan, Villers-Bocage, Goodwood and Epsom. All of these scenarios are discussed from tactical and historical standpoints in the second part of the manual. Unique to the scenario part of the manual is the inclusion of notes on the scenario itself and each side's role in the scenario as well as explicit instructions that describe how to modify the scenario to change history in a number of ways. You have plenty of ways to play around with the system.

Each menu in the game is given a letter, and selection of all options is done with the letter and cursor keys. Two players can participate in a battle in the game, each taking a side. If alone, you can enjoy *Battles in Normandy* by battling the computer, although the computer is a tough opponent to beat. Ultimately, who wins is not based on who does the most damage to the other side, but who correctly plays the game best according to the resources allocated at the beginning. So, don't think that the only way to win is by destroying the other side. The winner is the one who has accumulated the most victory points —winning the physical battle does not translate to winning the game.

Victory points are won throughout the game by meeting objectives, holding strategic locations for a specific number of turns and making correct tactical judgements. Also, points are awarded by killing other battalions in action. The bulk of the victory points (80% to 90%) come from meeting objectives. At the end of the game, a tally sheet pops up on the screen and lists three areas of victory point accumulation and a total. The higher total wins the game, as simple as that.

Battles in Normandy continues in the tradition of *Battlefront* in that all tactics and strategies are based on the corps level of command and lower. A lot of other war games concentrate on higher levels of command. A corps is structured as follows: the lowest level is the battalion; up to four battalions make up a regiment; up to four regiments and four independent battalions make up a division and up to three divisions make up a corps. A maximum of 60 battalions are available for your command—a reasonable number.

This corps level of command is a difference that makes *Battles in Normandy* stand out, but there is still a lot more that needs to be revealed. At any time players can request instant reports of a division or regiment that detail all pertinent information about the division or regiment by selecting the correct menu. I have found these reports to be very useful in determining important decisions and weighing options.

There is no limit to the number of decisions that can be made in a given turn. Your choices for action do not become final until you select the "Run 5" option from the main menu. Then and only then do the situations that will come about in a turn become manifested to the player. New options and more tactical and strategical decisions await the player after each turn is played. Thinking carefully about your next turn is what makes war games such a huge success. There really is no

Continued on page 114


INTRODUCING THE INDISPENSABLE ACCELERATOR CARTRIDGE FOR YOUR C64 OR C128.
WARP SPEED
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Reviewed by Scott A. May

Fontmaster 128

Computer: Commodore 128
Publisher: Xetec, Inc.
2804 Arnold Road
Salina, KS 67401
Medium: Disk
Price: $69.95



As a word processor, *Fontmaster 128* goes one step beyond full-featured.

Few software packages celebrate the joys of owning a computer as Xetec's *Fontmaster 128*. The successor to Xetec's popular word processor for the 64, *Fontmaster 128* is bigger, faster and incredibly fun to use.

Commodore 128 owners will need three items to take full advantage of everything *Fontmaster 128* has to offer: an 80-column monitor (color or monochrome), at least one 1571 disk drive, and a dot-matrix printer. Only the 80-column monitor is absolutely required to run the program. 1571 owners will enjoy the program's high-speed disk access, including "burst" mode when loading or verifying text.

Your choice of printers, however, is very important. *Fontmaster 128* is a print-intensive word processor. Although daisy wheel printers will function correctly, they don't allow you to utilize the program's specialty—creative manipulation of fonts and graphics.

The program's Setup menu allows users to create one or two default files for future sessions. User-defined parameters include screen colors, number of disk drives, text mode (fonts or "straight" dot matrix) and error alert (beep or screen flash).

The Setup menu offers the widest range of printer drivers I've ever seen. Users can choose from 18 popular printer interfaces and 122 printer models. As you scroll through the list, the menu also rates each printer according to control, fonts and overall capabilities. If for some reason your printer is not listed or doesn't function correctly, you are allowed to make a custom setup file. Normally this involves simply changing a few command values. Otherwise, the user manual contains an excellent step-by-step guide to create a complete printer setup file from scratch.

The latest version of *Fontmaster 128* (V1.3 — September 1987) consists of a three-disk package: the main program disk, the Spell Master dictionary disk and a supplemental font disk. Xetec uses a cassette port dongle for copy protection, allowing users to make backups of each disk. 1571 owners will want to combine the program and font supplements onto one double-sided disk for faster access. This can be done using any 128-mode file copier or with the special disk copier supplied with the program. It's also a good idea to file copy Spell Master onto a double-sided disk.

Fontmaster 128 has so many claims to fame, it's hard to decide where to begin. An obvious starting point is the available fonts. Fifty-five different fonts are included in the package, 16 of which are complete foreign language character sets. A special "border" font consists of dozens of single graphic symbols which can be chained together to create borders for pictures and text. Up to nine fonts can be stored in memory, utilized at any time with the press of a single key. A printer capable of 80 dots per inch will render all fonts in near letter quality mode. Additional fonts may be imported from other Xetec disks (*Fontmaster II* or the *Supergraphix* utility disk). *Fontmaster 128* also contains a full-featured font creator and character set editor for designing your own.

Another unique aspect of *Fontmaster 128* is its ability to incorporate graphics within a document. A graphics converter—available from the main menu screen—easily imports *Print Shop*-compatible graphics. The program also allows users to combine several *Print Shop* graphics into one composite picture. Finally, the graphics converter will accept many forms of high-resolution graphics commonly available from many commercial art programs.

Graphics are entered into text with a simple format command. Variations on this command allow you to place the picture starting at any column, in single or double-wide mode. If the graphic is small enough, *Fontmaster 128* will then automatically wrap text around it. This capability gives the program a near desktop publishing quality. To my knowledge, *Fontmaster 128* is the only word processor that takes advantage of many printers' quadruple-density mode. The resulting graphics and text are truly outstanding.

A text converter will also import data files from a Who's Who of word processors, including: *PaperClip II*, *Fleet System*, *Pocket Writer II*, *WordPro 3+*, *Word Writer 128*, *Easy Script* and *Paperback Writer*. The conversion program works very well, but is not needed for text stored as straight ASCII SEQ files. Other word processors often contain strange format commands or control codes imbedded in text files. Although *Fontmaster 128* will reproduce these commands, they are not compatible and should be removed or altered to comply with the *Fontmaster 128* format. Use the Search and Replace feature to quickly accomplish this.

The Spell Master disk offers what could be the best on-line dictionary for any Commodore 128 word processor. It features an incredible 100,000-word database divided into five categories: normal words, abbreviations, British words, proper names and vulgar words. The last four categories may be turned on or off before spell checking begins. Disabling a word class will result in increased speed but less chance that a word will be recognized as correct. Spell Master then sorts the document and displays vital statistics such as total words, unique words, average word length and average sentence length.

Spell Master is one of the fastest spelling checkers available. A sample 913-word document, with 468 unique words, was completed in just 46 seconds. Spell Master also includes a sophisticated word search with four different pattern-matching routines. Due to its speed, this feature can be used as an on-line dictionary.

As a word processor, *Fontmaster 128* goes one step beyond full-featured. Every

possible cursor control, editing command and text entry code is represented here, and then some. Commands are entered through control keys, of which the program contains no less than four sets: CTRL, SHIFT/CTRL, ALT and COMMODORE keys. Each set also comes with its own help screen, displayed in the status area at the top. The status area offers an astounding amount of information: current file name, cursor location, available memory, font style, type style and line pitch. *Fontmaster 128* is a post-formatting word processor—users must enter the preview mode to see exactly how a document will look when printed out.

The program's list of text modifiers is fascinating: underline, italic, boldface, super/subscripts, condensed, expanded, micro/tall height and four different printing pitches. The list goes on and on. Formatting commands are also breathtaking, allowing users to manipulate text in any way imaginable. The program's designer, Marty Flickinger, also wrote one of the most enjoyable manuals I have ever read. New users will be constantly amazed, but never in the dark.

Quite frankly, *Fontmaster 128* does things I never knew were possible, such as reversing the screen to type some foreign languages backwards. To list every feature would be an exercise in futility—there are simply *too many!* This program will continue to surprise you months after you thought you had it all figured out. This is absolutely the best word processor you will find for the Commodore 128.

Getting the Most from *Fontmaster 128*

• *Fontmaster 128*'s Search and Replace feature will accept *any* screen character, even format codes. Use it to instantly change fonts, text modifiers and various formatting commands.

• Four macro keys not enough? Assign nondescriptive initials—XZ, QW, VZ—for key words and use Search and Replace to substitute proper names, titles, etc.

• To preview text in dot-matrix mode, simply load the English font, assign it to the top of your document and switch to Font Mode. English is the closest to standard dot-matrix type and will provide an accurate representation. This process can be easily undone before actually printing.

• Placing graphics too close together is a common mistake that will cause *Fontmaster 128* to abort printing. The program does not allow two graphics to occupy the same line, regardless of distance between columns. Always use the Preview Mode to check for problems before attempting a complicated printout. This saves wasted paper.

• When converting *Print Shop*-compatible graphics to *Fontmaster 128* format, leave extra space around the picture frame before saving it to disk. The word processor wraps text very tightly around inserted graphics; the extra space gives it breathing room and creates a clean white border around printed pictures.

• Placing borders often requires a long string of special font characters. Store this string as a macro for quick, easy borders.

• There are many third-party graphics programs that use the *Print Shop* format, and each can be imported to *Fontmaster 128*. These include Epyx's *Graphics Scrapbook* collection, BCI's *Printer's Devil* and Springboard's *Graphics Expander*.

• Hi-res graphics are also easy to translate into *Fontmaster 128* format. Sources include digitized pictures (popular on Q-Link), Firebird's *Advanced OCP Art Studio*, Polarware/Penguin's *Graphic Magician, Jr.* and Thorn/EMI's *Quick Draw*.

Reviewed by Scott A. May

Earth Orbit Stations

Computer: Commodore 64
Publisher: Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
Medium: Disk
Price: $29.95

Can you recall the unbridled optimism America showed towards space exploration in the early 1960s? No goal was too high—space stations, lunar colonization—our imaginations ran wild.

Today, we are closer than ever to turning these fantasies into realities. But our romanticism has been replaced by harsh reality: space exploration is business. *Big* business. Tomorrow's space explorers must be part scientist, part entrepreneur and part public relations agent.

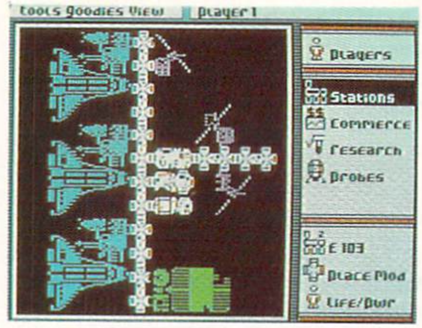
With this in mind, welcome to the world, of *EOS—Earth Orbit Stations*—a new computer board game from Electronic Arts. Based on NASA's plans for the next 50 years of space exploration, *EOS* is a simulation *tour de force*, thrusting players headlong into the future.

The game casts you and up to four other players in the role of Space Directors, employed by the Federation of EOS. Your goals are to construct space stations, conduct research, and develop and market new products. Your three opponents may be human or computer-controlled. The space race is still on and competition is the name of the game.

EOS offers a choice of seven different missions, each remarkably varied in game length, player goals and difficulty levels. A word of caution: although *EOS* is both entertaining and educational, it is an intellectual simulation, *not* an arcade-style game. Very young players may need adult participation to understand the game completely.

Each mission begins in the spring of 1996 and proceeds in fiscal quarters for a prescribed number of years. There is no internal game clock—each player determines the length of his own turn. For this reason, longer missions may span days or weeks. These are easily saved to disk and reloaded for future play.

The first three scenarios can be viewed as training missions to prepare you for the advanced projects. "Research" gives players two years to build a space station in earth orbit. Within this time period, each



player must develop a steady income and engage in some type of research to earn technology points. The player with the most technology points at the end of two years wins the game.

The next mission, "Dry Dock," has no time limit. Instead, the first player to successfully build a dry dock in earth orbit wins the game. The construction and technology skills learned here will come into play on more advanced missions.

The "Shuttle" mission presents players with an accelerated course in space shuttle protocol. The object here is to use shuttles for delivering research modules to orbiting space stations. Here you must utilize efficient shuttle launch schedules with the technology skills learned in the Research mission. The player with the most technology points after four years wins the game.

From here, the remaining four missions become progressively harder. For advanced players only, these are campaign missions that call upon every skill you've learned, including speed, flawless execution and patience.

The first is called "Mars Rescue," and features a plot right out of a 1950's sci-fi thriller. An explosion has occurred at the Mars 1 Settlement, producing many casualties and critically damaging its oxygen supply. Each space director has just over three years to erect a space hospital in Mars orbit. The seriousness of this mission has prompted the EOS Federation to advance each player 1000 credits to quickly establish rescue operations. Its urgent nature makes Mars Rescue an incredibly tense scenario—a life or death race.

Mars Rescue also introduces a fascinating new element to the game: cargoliners. These massive space stations are constructed in orbiting dry docks and equipped with propulsion units for travel into deep space. Difficult to build and expensive to maintain, cargoliners become an important aspect of the game as you begin to explore regions beyond the confines of earth.

The next mission, "Lunar Base," is somewhat less serious, but very demanding. The object is simple enough: the first player to build a lunar settlement wins the game. Your skills at research and attaining high technology levels are given a strenuous workout. Cargoliners are used to deliver necessary modules to the lunar surface. Keep in mind that a lunar settlement consists of more than a simple structure. It must be productive—establishing fuel bases and ore mines—to generate income and technology points.

Another mission, "Space Colony," reaches even further into advanced technological development. Projects include building Fabrication Plants, Mineral Plants, Catchers and Mining Settlements. This is one of the longest and most difficult missions in the game. The concept of building a multi-faceted, completely functional space colony is mind boggling. The first player to fully comply with all criteria of a space colony is declared the winner.

The final mission in the game is a whopper—"Search for Life." This is what it all boils down to, a total compilation of your knowledge and skill devoted to the search for life in our solar system. Components of this mission include building a communications relay station in Jupiter's orbit, launching deep space probes and establishing research colonies for investigating incoming data. Players are given ten years to report discoveries.

The Search for Life scenario in itself is worth the price of the entire package. It is a masterful test of scientific knowledge set within the context of a profound metaphysical quest. The program doesn't pull any cheap shots with this one. What you find—if anything—will seem as real and meaningful as if you were directly involved with NASA's actual Voyager probe. Simply brilliant.

Earth Orbit Stations is not a game for all tastes. It requires patience, a good degree of intelligence and a well-rounded understanding of management procedures. It is a multi-layered board game with thousands of variables—no scenarios will ever have the same outcome. Best when played with several human opponents, the computer also makes a tough, demanding competitor.

Earth Orbit Stations could have easily been a flat, lifeless database disguised as a simulation. Instead, it is a joyously addictive celebration of achievement and untold possibilities. C

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Reviewed by Gary V. Fields

WordPro 128 with FilePro 128

Computer: Commodore 128
Publisher: BetterWorking from Spinnaker
One Kendall Square
Cambridge, MA 02139
Medium: Disk
Price: $39.95

WordPro 128 with *FilePro 128* has a lot to offer the Commodore 128 user. You get a powerful, professional word processor (including a 100,000 word spell-check utility), plus *FilePro 128* (a simple but flexible data base)—all at an affordable price. *WordPro 128* is one of the least expensive 128 word processors on the market, yet one of the best, and *FilePro 128* will handle the database needs of most people.

Most of us want a word processor which has all the features we need. We want it to take advantage of all the computer's abilities, be powerful enough to do today's jobs and those we'll face next year, and we want it to be easy to master and affordable. That describes Spinnaker's *WordPro 128*.

WordPro 128 is an impressive, business-quality word processor. It performs flawlessly, uses the system's 80-column display, and has every feature I've ever needed from a word processor.

The program comes on a self-booting disk, so starting is as simple as flipping the computer on. *WordPro 128* comes with a simple program called "WP128 INSTALL". It can be run as often as you need to record changes to your system (e.g., new monitor, different printer, etc.) After that, each time you boot *WordPro 128* your choices are automatically selected.

WordPro 128 makes good use of the 128's memory, leaving room for up to 500 lines of text in two separate text areas. This means you can edit two documents at the same time, or more likely, merge text from one document into another. The screen editor is fast. As is true of all word processors, the cursor slows a bit when using insert mode near the top of a long document.

When it comes to features, *WordPro 128* has all that I need. It supports multiple headers and footers, soft hyphenation, centering and justification and most other formatting features like line spacing and font types (underline, bold, italics). Its editing functions include the standard cursor controls, word wrap, block commands, search, search and replace, and delete.

Not only does *WordPro 128* have lots of power, but it is also easy to get to that power.



Deletions, as well as block-controlled copy and move text commands, are stored in what Spinnaker calls an "Oops buffer." You can dump the text stored in this buffer back to the screen, so erroneously deleted text as well as blocks intentionally manipulated can be retrieved instantly. There is nothing more frustrating than accidentally deleting important text and having to rekey it from your own memory instead of the computer's.

I am not pleased with another of *WordPro 128*'s features—the destructive Return command. Any time the RETURN key is pressed, all text on the same line as the cursor and to the right of it is erased (and not stored in the "Oops buffer"). This annoying action can be avoided by always using the cursor keys or SHIFT/RETURN to move around the screen.

After you've written a document, it can either be saved to disk or dumped to a printer. *WordPro 128* supports all Commodore-compatible disk drives including dual drives and comes with over 50 specific printer modules. These modules, when loaded, automatically define all the variables needed to access all the special features of that printer. The module for your printer can be loaded manually or selected automatically by use of the "WP128 INSTALL" program.

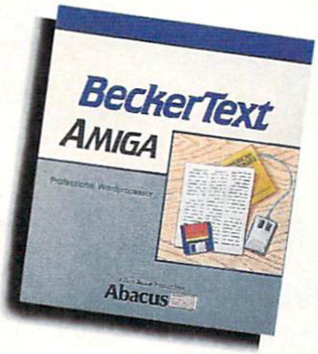
I found most of *WordPro 128* commands logical, since they are structured around the COMMODORE key and the function keys. Any command you'll ever need to write, format or edit text can be accessed by pressing a combination of these keys. For instance, to begin or end INSERT mode you simply press the COMMODORE key and I. COMMODORE/S sets a tab, and COMMODORE/R reformats a paragraph. Press F3 to display a disk's directory and the HELP key opens three help windows. All in all this logic works very well. There are a few occasions when the sequence is not as logical as it could be. For instance, while the combination of COMMODORE/D to delete text makes sense, the use of the letter "J" to copy a range to the buffer does not. The problem the programmer ran into was that the logical letters "C" (copy) and "B" (block) were used for other functions. The program does offer three screens of information which show the correct sequence for each command.

WordPro 128 has two different preview options. The straight video preview displays the text exactly as it will appear when dumped to a printer—margins, spacing and page breaks are accurately duplicated, and you can read the text as you scroll through each page. Special type faces (bold, italic and underline) are also shown on screen using this option.

Continued on page 110

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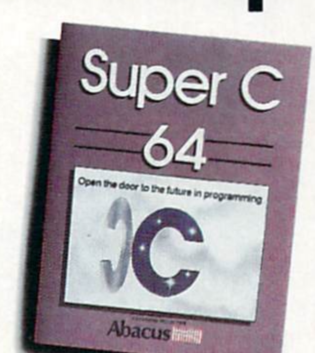
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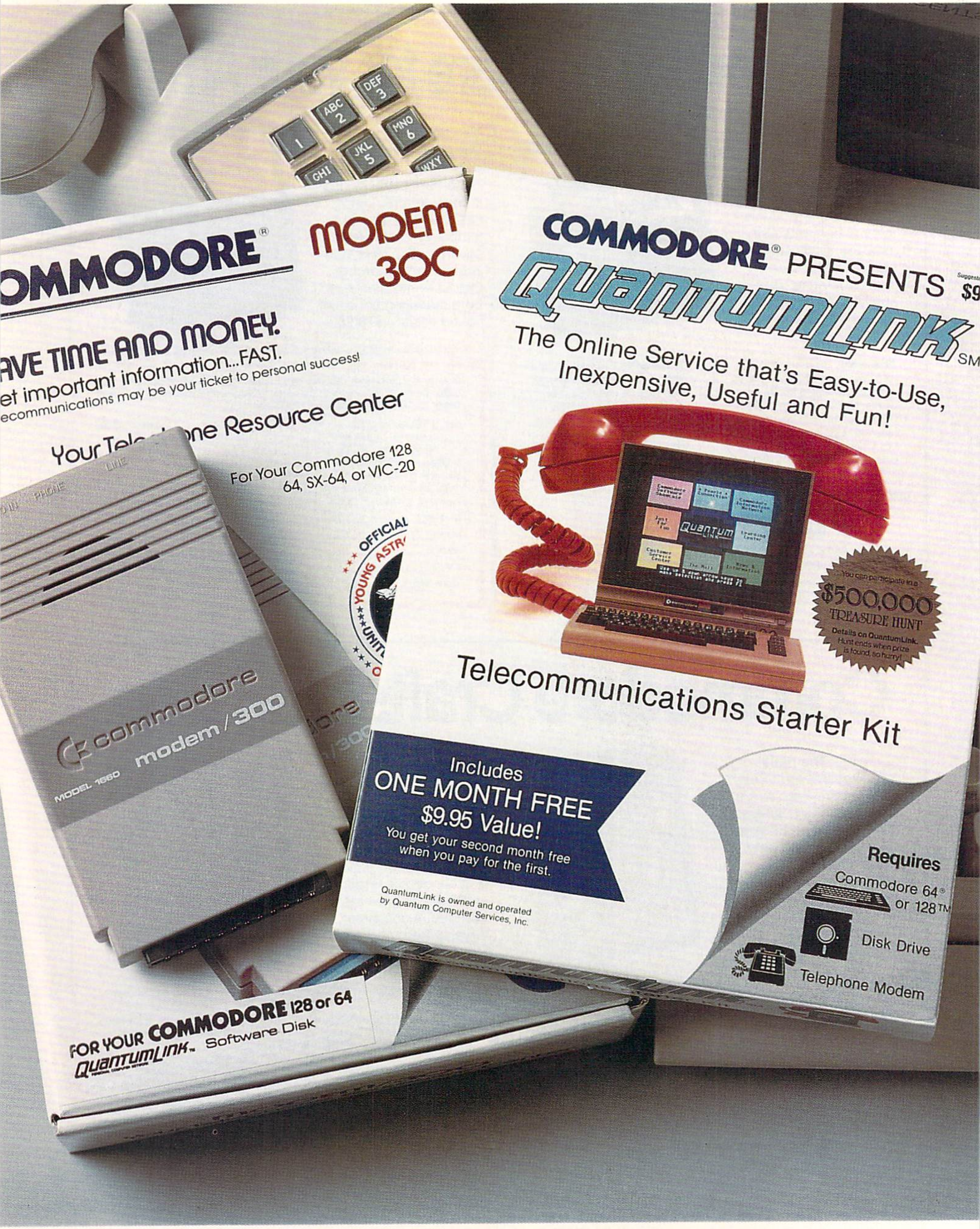
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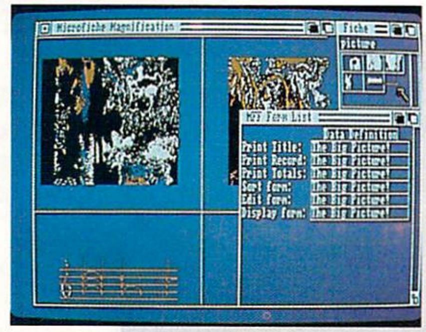
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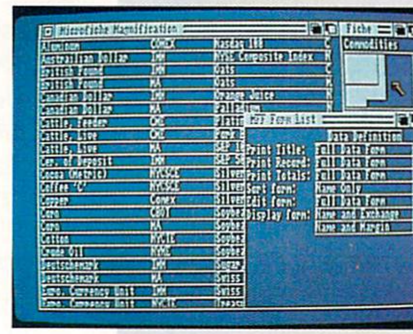

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Reviewed by Jeffery Scott Hall

Microfiche Filer

Computer: Amiga
Publisher: Software Visions, Inc.
26 Forest Road
Framingham, MA 01701
Price: $99.00





Microfiche Filer also allows you to import graphics from your favorite IFF-compatible paint program.

Microfiche Filer by Software Visions brings new meaning to the word "database." You may have used a database for such things as an address book, recipe file, or a catalog of computer disks. With *Microfiche Filer*, however, you can store graphics as well. And creating a database with *Microfiche Filer* is neither painfully difficult nor time consuming.

Setting up the Program

The first thing you should do after unboxing the program is make a backup of the disk. *Microfiche Filer* has no copy protection, so you can use the standard Workbench copy format or any copy program.

Once you have made your backup, you can choose how you want to run it. You could insert Workbench in one drive and *Microfiche Filer* in the other (if you have two drives). Now the program can be run from either the CLI (Command Line Editor) or the Workbench. Or you can install *Microfiche Filer* on a hard disk drive. The manual gives a full, easy to understand, explanation of all these procedures, including the hard disk installation.

What Makes *Microfiche Filer* Different

If you have never used microfiche before, you might be wondering what it is. Stated simply, it is a sheet of film which stores reduced information (i.e., magazines, newspapers, card catalogs, documents, etc.) and is read through a magnifying machine. To look at the information, you slide a lever around until the information you want is showing.

Microfiche Filer applies this technique to database management. Other database programs use what I call the "hunt and seek method." The hunt and seek method makes you search through computerized "file folders," until you finally locate the information you wanted. This process can be very slow and aggravating when you want to find information quickly. *Microfiche Filer* allows you to find your information more quickly than ever before.

Microfiche Filer does not stop there. The program also allows you to import graphics from your favorite IFF-compatible paint program. Real estate agents can maintain files of available properties incorporating photos; companies can keep inventory files with a picture of each item; police departments can organize files of mug shots or fingerprints. As you can see, *Microfiche Filer* greatly expands the possible practical uses for a database.

Taking a Look at the Set Up

All *Microfiche Filer* databases are displayed using three windows. The biggest window on your screen is the Microfiche Magnification Window. This window displays a magnified view of your database. The second window, located in the upper right corner of the screen, is the Fiche Window. Inside the window is a colored box, which represents the size and location of your magnifying glass. By clicking the left mouse button on this box and dragging it around the inside of the Fiche Window, you can display different parts of your database in the Microfiche Magnification Window. One nice feature about this is the fact that you may drag the colored box around the inside of the Fiche Window without waiting for screen updates. This allows you to view any portion of your database as fast as you want, so that you can find the information you want at lightning speed. If your database is fairly long, a "slider" will appear in the window. By clicking the left mouse button, dragging it up or down, and moving the colored box, you can display all of your database.

The third window is the Form List Window, located in the lower right portion of the screen. This window contains seven boxes, one on the top and six on the bottom. The top box is the Data Definition, double clicking on it will cause the Data Definition Editor to appear. The other six boxes are actually "Slots." You drop "forms" into these slots to designate how your data is displayed, sorted, printed and so on. The following is a list of the six slots: Print Title, Print Record, Print Totals, Display Form, Edit Form, and Sort Form.

Constructing a Database

Microfiche Filer provides five example databases, one of which is a picture database to help you get a better understanding of the program. However, in order to help explain some of the program's features, lets walk through a construction of a data base using *Microfiche Filer*. One of the first things I did when I got *Microfiche Filer* was to construct my own customized address book. First decide what information you would like to store. You will find it difficult to start from scratch unless you

have given it previous thought.

After loading *Microfiche Filer*, select the Make Directory option from the File menu. Name the new directory something meaningful to remind you of the database. Now, select the Open New Database from the File menu. To build your database, double-click the left mouse button on the Data Definition box in the Form List window. This will cause the Data Definition Editor to appear. You will now see a default Field Name, and field type. Now, you can type in the information you wish to represent the field. Change the field type by clicking the left mouse button over it. This gives you a choice of text, numbers or pictures for that field name. Every time you wish to add a new field, select the Add Field option from the Edit menu. For example, I typed in the following, and selected the Add Field option after every item: Name, Address, City, State, Zip Code, Phone Number, Note. Once you have typed in your information and selected the appropriate field type, click on the close gadget and select the Save option.

Now, you should set up a form that displays all the fields, suitable for editing. To do this, double-click on the box that has the name Display Form. You will now be in the form editor. Clicking the left mouse button in the box will reveal three gadgets inside the window—the diamond gadget, the arrow gadget and the drag gadget. The arrow gadget is used to re-size the window. The drag gadget will allow you to drag the window around, so you may position it where you wish. The diamond gadget will allow you to select from one of the field names that you have previously created in the Data Definition Window. To scroll up and down through the field names, click the left mouse button on the top or bottom portion of the diamond gadget. Once you have the fields set up in the order you wish, click on the close gadget and select save. Your form will now be displayed in all six boxes in the Form List Window.

If you wish to view what you have done, double-click on one of the six boxes, and you will see the structure of your database.

Changing the way your database is displayed, sorted, edited and printed is as simple as editing a form and dropping it into one of the six slots in the Form List Window. (To sort by state you would simply double-click on the sort box in the Form List Window. Now, just include the state field and select save. Your database will now be sorted by state.)

To start entering the data, select the Add Blank Record menu option, enter the data, click on the close gadget and select save. If you wish to change the information you have entered, simply double-click on the record, edit any of the fields, click on the close gadget and select save.

A picture database is handled in the same way as a text database. Once you have each picture in your database, it can be displayed in the magnification window. The key to this is a procedure called "Squeezing." This takes a picture, or brush that is saved in ILBM IFF format and reproduces a miniature of it. Scan your database of pictures the same way you scan a database of text, using the magnifying glass in the fiche window.

Microfiche Filer uses the standard four-color Workbench screen to reproduce the pictures, or brushes, instead of a customized screen. Thus your pictures will be displayed in only four colors. However, if you wish to view your picture in full color and full screen size, you may do so by double-clicking the miniature picture and selecting Display Full Picture from the menu. You will now see your picture on a separate screen, you can return to *Microfiche Filer* by clicking the left mouse button. *Microfiche Filer* will not display HAM (hold and modify) mode pictures at this time, but it is planned in the next update.

Printing a database of text or pictures is very simple. Choose the All option from the Select menu. This will cause all of the records in your database to be selected. If you wish to print only certain records, click the left mouse button on each record you wish to print. Now, choose the Print option from the print menu, and your database will start printing. If you have a color printer you may print out any picture(s) you wish in color following the same directions as above.

Requirements

Microfiche Filer will run on a 512K Amiga with one disk drive. However, I would recommend two disk drives to cut down on the time it takes to swap disks and to provide a better operating environment. On a 512K Amiga you can get between 300-700 records in your database, depending on the size of your records. With a one megabyte Amiga you can store up to 1000 records, and with a 1.5 MB Amiga you can store 2000-3000 records. *Microfiche Filer* constantly keeps track of the system's memory, in order to prevent you from losing your data. If you start to run low on memory, *Microfiche Filer* will let you know, so you can choose the Emergency Save and Exit option to save your database to disk without any loss of data!

Summary

I had a few questions about the *Microfiche Filer*, so I talked to Software Visions' Gary Samad, author of this great program. The first question I had was about the ability to import ASCII text, since *Microfiche Filer* does not have this capability built in. Gary told me there is a public domain ASCII converter, called MFF_Update, which will allow you to import text to *Microfiche Filer*. This program can be found on most computer networks, such as PeopleLink, CompuServe, etc. This feature will be a built-in command in a future version.

I used version 1.0 of *Microfiche Filer* for this review. However, version 1.02 is now available. Some of the new features of version 1.02 are the ASCII converter and the support of European characters. Registered users can obtain version 1.02 directly from Software Visions for $9.

Gary told me that HAM mode is not currently supported but will be available in version II, which should be released during the second quarter of 1988. The features planned for version II are absolutely amazing! They will include HAM mode support, better picture "squeezing," calculations, more sophisticated printing and a general "speed up." The upgrade will be provided for a very reasonable price.

Telephone support for *Microfiche Filer* is provided free of charge to any registered user. To become a registered user send in the warranty card in the manual.

Software Visions has put together one of the most comprehensive manuals I have ever seen. The manual is well written and includes a thorough index. You will find a listing of all the keyboard shortcuts that you can use instead of the mouse. The manual is not bulky and can be used very easily on your lap or desktop.

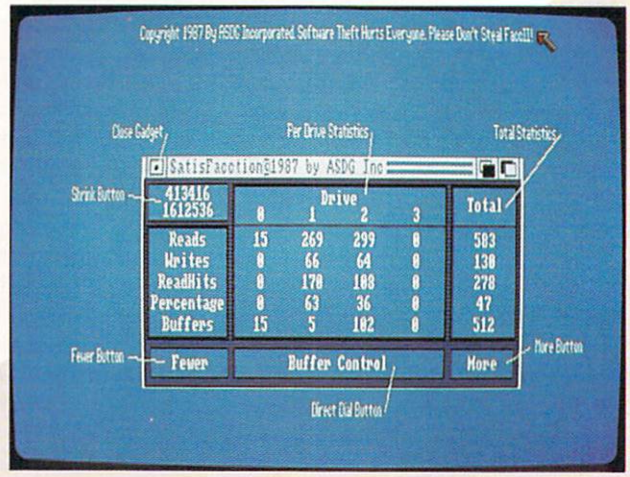
Microfiche Filer is definitely a breakthrough in how we currently think of databases. In my review, I've tried to give you an understanding of how the database works, rather than a reprint of the Microfiche manual listing all the commands. I hope that the message was conveyed that this is one of the most professional databases available. No Guru errors were ever encountered when working with this program. *Microfiche Filer* is simply the fastest, easiest, most advanced database program I have ever seen, and can be classified as the "King of Databases"! C

Reviewed by Graham Kinsey

Facc/FaccII

Computer: Amiga
Publisher: ASDG, Inc.
925 Stewart St.
Madison, WI 53713
Price: $34.95

Facc is a floppy accelerator for your Amiga that works by a technique known as "caching."



If you have just upgraded from an eight-bit machine to an Amiga, you may think at first that the Amiga's advanced disk drive is a wonderful piece of hardware. Because it accesses almost a megabyte of data per disk, the Amiga's disk drive appears to have very fast access speeds. The drive can retrieve a whole track at a time, which amounts to over 5K of data. However, just one IFF picture can be over 100K in size and archives of Amiga files (archived for transfer via modem) often exceed 200K in size.

In addition, your drives have to deal with AmigaDOS' scattered storage of files and directories. On an Amiga disk that has been written to many times, programs and directories can become so scattered that the drive head spends much more time moving from track to track than reading data. What should be a very quick storage device can become very time-consuming. ASDG, Inc. offers *Facc*, an answer to slow Amiga disk I/O.

Facc is a floppy accelerator for your Amiga that works by a technique known as "caching." Caching is remotely similar to a RAMdisk, in that both are devices that use memory to store disk-based information. Instead of storing programs, a disk cache stores actual blocks of data straight from a disk. Whether a particular block of disk data contains a small program, a piece of a program, a piece of data, a picture, another file, or a piece of the hierarchal directory is immaterial. The only thing that matters to a cache about a block is that a program running in the Amiga needs access to that particular block of data. When a block of disk data is first accessed by the Amiga after the cache has been created, it is not only given to the program that needs it, but also to the caching program, where it is stored in dedicated memory. Then when the Amiga needs to access another block of disk data, it looks to the cache to see if that block of data has been stored. If it finds that the block of disk data has been saved for further access in the cache, then the Amiga will retrieve it, and the disk drive will never have to be accessed. Since accessing data from memory is much faster that retrieving it from a disk, the potential speedup can be tremendous.

Caching is not new to the Amiga. It has been available to Amiga users for many months in the form of Addbuffers, which is a standard command supplied on the Workbench disk. However, there are some problems with Addbuffers. The worst is that once you have allocated memory for caching via Addbuffers, that memory is dedicated to that use forever. There is no way that you can retrieve any memory currently being used by Addbuffers. Another problem is that it always uses Chip memory, even if you have Fast memory available in your Amiga.

Facc has neither of these shortcomings. It always looks for Fast memory first, and will never steal your valuable Chip memory unless it must. *Facc* also allows you to readjust the amount of memory it's using.

When you first run *Facc* you will see that a lot of information is packed into a small space. Most of the window is devoted to information that keeps you informed of all aspects of the cache. It displays information for up to four different drives, plus the totals for each drive. *Facc* displays the number of reads and writes that have been performed on each drive, in terms of Amiga disk blocks (512 bytes per each Amiga disk block). *Facc* shows the number of disk buffers that have been saved for each storage device, plus the total amount of memory (also in terms of disk blocks) that you have allocated for *Facc*'s use. *Facc* also displays the number of ReadHits, which tells you how many disk blocks have been retrieved from the cache and have not had to be retrieved from the disk drive. Finally the percentage of ReadHits to Reads is shown, which gives you a rough estimate of just how efficient the cache has been so far.

The bottom of the *Facc* window displays the buffer control buttons, which allow you to add or subtract memory to or from *Facc*. The left corner button serves two purposes. First, it displays the amount of total system memory (both Chip and Fast) still available for use in your Amiga. Its other use is activated if you click on the box. If you do this, *Facc*'s window will automatically shrink to a tiny size. The original information contained in the *Facc* window will be replaced with a small gadget labeled "Expand." If you click on this new gadget, the *Facc* window will be restored to normal.

Facc's manual is stored on the disk as a text file. In addition to the *Facc* program itself, there are also a few Amiga public domain programs supplied on the disk. FastMem will shut off all Fast memory, and SysMon monitors various things, including system activity and memory use. If you have been wishing for a turbocharged version of an Amiga floppy drive, *Facc* is a software program that will impress you.

Update: Facc II Now Available

Since I wrote this review an updated version, *Facc II*, has been released. One big change is that the original *Facc* is now broken into two distinct parts. The actual

Continued on page 112

Reviewed by Russ Ceccola

Guild of Thieves

Computer: Amiga
Company: Firebird/Rainbird
Distributed by:
Activision
2350 Bayshore Pkwy.
Mountain View, CA 94043
Price: $44.95

When was the last time you ransacked a mansion? Have you ever managed to make off with all of the treasures and wealth of a major bank, temple and all of the surrounding land? You say you've done both!? Then you just may be the thief that the Kerovnian Guild of Thieves is looking for. Sign the standard contract, pick up your wardrobe and essential possessions, and get ready for the challenge of your life.

This is the kind of fictitious introduction that you may have received right before beginning *Guild of Thieves*, one of the latest adventures released by Firebird Software under its Rainbird logo. *Guild of Thieves* is a text-and-graphics adventure that starts you off in a boat moored to a remote jetty in the fabled land of Kerovnia. With you is the Guildmaster of the Kerovnian Guild of Thieves who presents you with your mission: find and steal all of the treasure that a nearby mansion and the surrounding land contains and bring it all back to the boat to earn full membership in the Guild.

What the Guildmaster doesn't tell you is that on your dangerous quest you meet death face to face more than enough times to take away even a cat's nine lives. Still, you must prove that you have what it takes to become an expert thief by gathering treasures in many strange places all around Kerovnia. If you ever do make it back to the boat with your hoard, you can be sure of earning your lifetime membership to the Guild—especially after you see what's in store for you.

Guild of Thieves draws you in and doesn't let go until you've exhausted all of the possibilities. This game is so addictive that even after accidentally reformatting a save disk late in the game, I started over again in order to finish.

Although the game is predominantly a text adventure, use of the screen is excellent. Pictures can be accessed in various





Guild of Thieves draws you in and doesn't let go until you've exhausted all of the possibilities.

locations. There are four scrolls at the top of the screen (activated with the left mouse button) that contain three special commands each. Under these scrolls is the text which takes up the bulk of the screen. Bringing up a picture is a unique process for adventure games in that you pull a picture down as a window by using the Scroll Bar and the right mouse button—thus showing as much or as little of the picture as you want.

This feature eliminates having to look at every scene in a game, cutting down boredom and allowing greater user control over the game environment. Finishing *Guild of Thieves* takes a long time and, although the graphics are very detailed and colorful, I don't want to stare at the same picture any longer than about ten seconds. Otherwise, playing the adventure would be like being held captive in an art gallery, strapped to a seat with your eyes held open.

The graphics that appear throughout the game are a legacy to the power of the Amiga, as is the rest of the game. Some of the objects you see on your screen aren't actually part of the game, but this discrepancy is more than made up for by the beautiful pictures. There are about thirty scenes in the game that are depicted graphically, and they tend to heighten the effect of playing *Guild of Thieves* by bringing Kerovnia to life right before your eyes.

All commands that can be executed from the scrolls with the mouse can also be typed in at the game prompt. However, the separation of these commands into four units makes them easier to use and remember. The Files scroll contains the standard RESTORE, SAVE and QUIT commands. The Text scroll contains the NORMAL, VERBOSE and BRIEF commands—those that govern the amount of description given about a location after you enter it. The next two scrolls are unique to the game.

The Goodies scroll contains the TEXTSIZE, PRINTER and CREDITS commands and the Specials scroll hides the SPEECH, EXITS and HINT commands. CREDITS gives the list of contributors to *Guild of Thieves*, but the other commands are the heart of what makes choosing this adventure as your next conquest imperative. SPEECH turns on the speech in the Amiga and has the computer recite every word that appears on the screen. Although the speech processor is slow, a few minutes of time with it livens up the game to keep you tuned in to the text.

TEXTSIZE toggles the size of the letters on the screen from a very small, barely legible font to a large, bright type style that I used for the rest of the game. Reviewing an adventure is a long process and every company that makes text adventures should include this helpful feature. PRINTER toggles your printer off and on for making a transcript of your game.

EXITS gives you a list of all the possible exits from a location—a map-maker's

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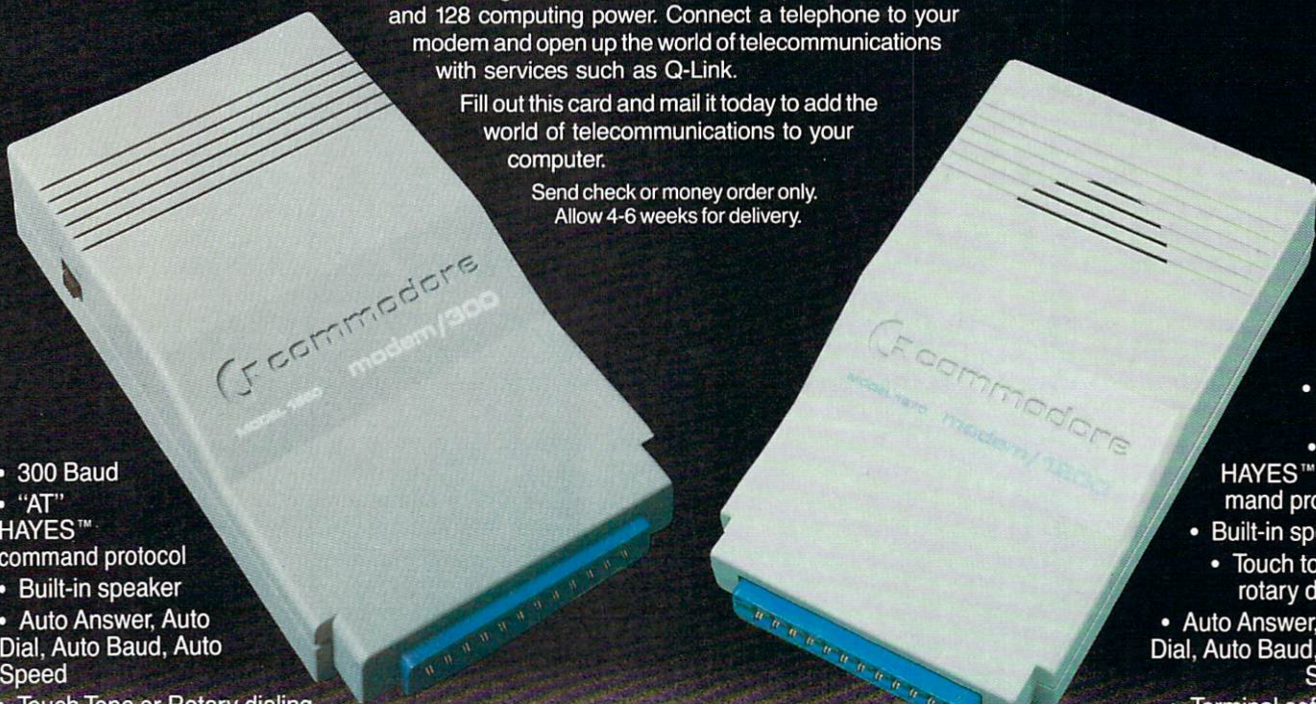
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Reviewed by Russ Ceccola

Arazok's Tomb

Computer: Amiga
Publisher: Aegis Development
2210 Wilshire Blvd., Suite 277
Santa Monica, CA 90403
Price: $39.99

You travel to Scotland to find out what happened to Uncle Jason and Daphney, while gathering information for the biggest story of your career.



Whenever I see that a company has put a warning label on a game, I instantly become curious about that game. Such a label exists on *Arazok's Tomb,* suggesting parental guidance for children under 14 years of age. In fact, *Arazok's Tomb* is described on the front of the package as "an adult graphics adventure." Although some of the situations and language are more suitable for adults, this warning is only because of the game's frightening and violent tone rather than any objectionable material. I wouldn't suggest the game for young children simply because they might not understand it.

Arazok's Tomb casts you as Mark Trade, a reporter who specializes in the bizarre and writes for the *International Inquirer.* You've just received a telegram from Daphney, who was scouring the countryside in New Galloway, Scotland, with Uncle Jason, looking for the tomb of an ancient Druid-type priest named Arazok. Arazok came to be at the beginning of time and followed unholy practices, breaking off from the other Druids and enticing some others to follow and join his sect.

The holy Druids waited anxiously to get rid of Arazok. When the evil priest went off on a journey through Hell, they killed his sect and destroyed his temple. The Druids believed that Arazok would be forever trapped on the "other side." Daphney believes that Uncle Jason has opened the gate to Arazok's domain by exploring a hill called Caer Arazok, said to be his tomb. You must travel to Scotland and find out what has happened to Uncle Jason and Daphney, at the same time gathering information for the biggest story of the year and your career.

Arazok's Tomb takes full advantage of the incredible windowing, graphics, sound, speech and processing power of the Amiga. The game's real strength lies in its well-constructed story. Many features exist in the game that, coupled with the story, give *Arazok's Tomb* a stronger backbone with which to survive amongst the myriad of graphic adventure games already on the market.

The game screen is well divided into different areas: one for the pictures, one for the text, one for the compass and clock and a line along the top of the screen from which menus are pulled down. This organization makes playing *Arazok's Tomb* that much easier. The screen is functional, as well as visually attractive.

Arazok's Tomb claims to be a "graphic adventure." The term generally means that the designer has drawn some pretty pictures to pop up at appropriate times during the game. Instead, *Arazok's Tomb* incorporates graphics to enhance the adventure and offer some foothold for your imagination to climb to greater heights.

Arazok's Tomb has a different picture or scene for every location in the game. These are beautifully done and are animated when appropriate, which adds a distinctive atmosphere to *Arazok's Tomb.* I don't know about you, but when I'm looking straight down the mouth of a giant snake on my screen and his tongue is moving, it sends a chill down my spine.

The text window allows you to cycle up and down through the transcript of the game by using the up and down arrows on the right side of the window. This feature allows you to look at past descriptions of rooms and examine the moves that you've made and the items you've accumulated. This transcript fits nicely with the theme of the game—the idea that the commands typed into the computer and the machine's responses are all part of the notes you are taking for your story on Caer Arazok. Similarly, you can print out the text buffer all at once from the File menu at the top of the screen.

A clock that keeps track of every second ticks in the upper right hand corner of the screen, so don't get lazy! Also, a compass and two boxes with the words "UP" and "DOWN" printed on them are situated in the upper right half of the screen for ease of play. Instead of typing in directional commands, you need only point the on-screen arrow at a compass direction and click the mouse button. This feature is a welcome addition, eliminating all of the typing associated with ordinary movement from location to location.

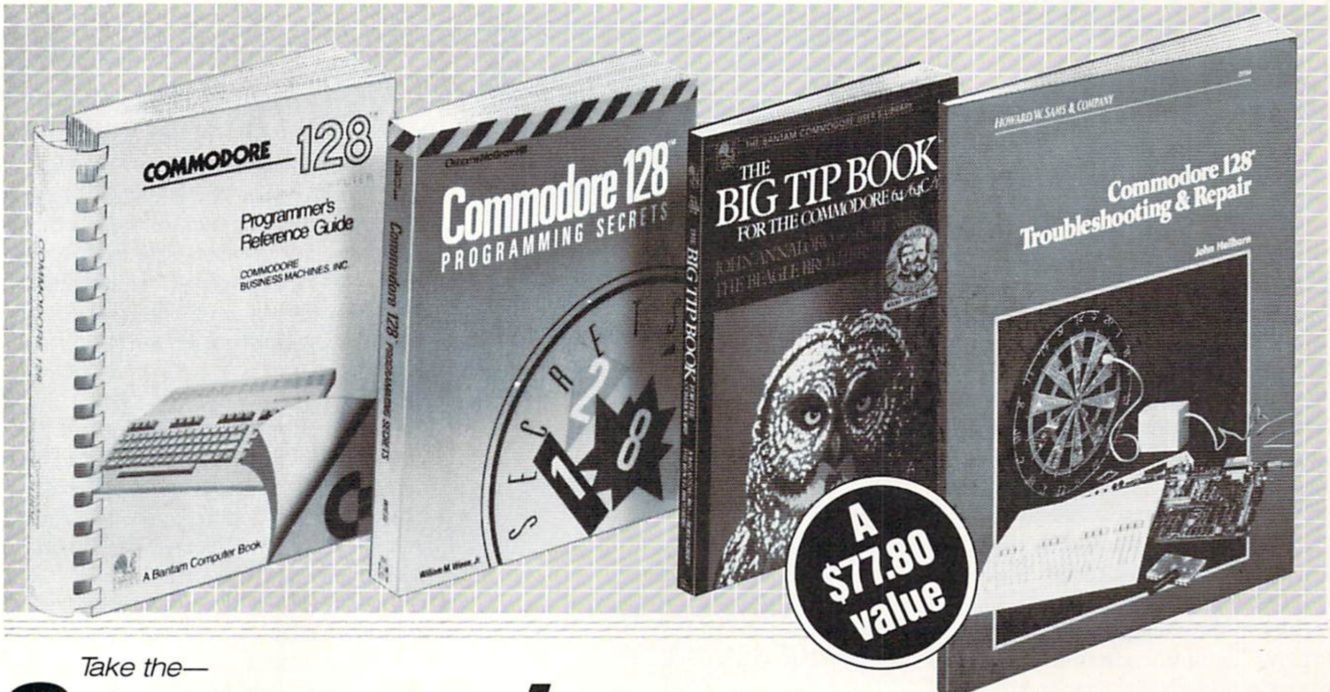
Other commands can also be executed by using the mouse and pull-down menus. The four menus are: Files, Options, Actions and Inventory. The Files menu is used for all saves, restores and game management commands. The Options menu allows you to turn on or off the speech and sound effects. The coexistence of the Actions and Inventory menus demands notice in *Arazok's Tomb.*

All movement commands can be accessed through the Actions menu, giving the adventurer three choices for entering movement orders: compass, menu and typed commands. Also, the most-used commands are in this menu, such as LOOK, GET, PUT and READ. With LOOK, GET and PUT, you can also use the Inventory menu. After you choose one of the three commands, the computer prints it on the command line in the text window, without executing it. You can then choose an object from the Inventory menu to finish off the command and hit RETURN. Inventory access such as this is

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Commodore 4/88

Reviewed by Jeffery Scott Hall

Dark Castle

Computer: Amiga
Publisher: Three-Sixty Pacific Software
2105 S. Bascom Ave.
Campbell, CA 95008
Price: $39.95

From out of of a horror movie and into your home comes *Dark Castle* from Three-Sixty Pacific Software. Dark Castle starts out just like any other horror movie, inside a dark, scary, damp castle. Except all is not well inside this castle (not by a long shot), and you must fight to stay alive!

The game begins with two pictures. The first is a company logo, and the second is (you guessed it) a dark castle. While the dark castle picture is displayed, lightning crackles in the background and scary music plays. To continue from this bone-chilling scene, click the left mouse button. The screen is now split in half vertically. The left half displays the dark castle, while the right half displays the top ten scores.

Along the bottom of the screen, are eight requesters in the shape of scrolls. The top three requesters are the skill levels: beginner, intermediate and advanced. Along the bottom row are: play, quit, demo, info and clear score. To select one of these options, click the left mouse button over the requester. When you click on the play requester to start the game, the drawbridge to the castle creaks down to the ground for your poor unsuspecting soul to cross over.

The Great Hall

Now that you have made it inside the castle, you find yourself standing in a Great Hall. Here, you must choose to enter one of four rooms, all of which have evil monsters and unknown dangers waiting for you. To choose one of these rooms click the left mouse button on its door. You will now run (or will you?) toward the door that you have chosen and watch the door creak shut behind you. The type of danger that awaits you all depends on which door you have chosen. You can be sure of one thing—you are the unsuspecting victim.

The Objective

Your objective is to overthrow the Black Knight, which is no simple task. You, the hero, must pass safely through fourteen progressively difficult danger zones. You will be attacked from the ground and the air. Your air attackers are flying dragons, monkeys and bats. Your ground attackers are rats, whip-cracking henchmen, guardians and even Merlin the Magician. These are just a few of the evils you will encounter as you progress in the game.



Your attackers include flying dragons, monkeys, bats, rats, whip-cracking henchmen, and even Merlin the Magician.

Just to be on the safe side (if there is such a thing), you are given sixty rocks to ward off any menacing creatures. However, there are instances where you will find your rocks useless, and you must use a more elaborate weapon (if you have one). You will also find yourself provided with two bottles of elixir to help protect you from rat and bat bites. If your guard is down and you happen to lose a life, do not fear. You are provided with four extra lives to help you in your quest, and each time you are killed, your supply of rocks and elixir are restored.

The Journey

You will find your dangerous journey has great variety. As you explore the different zones of the game, you will encounter dungeons, laboratories and caves. In order to advance, you may find yourself climbing up and down ropes and ladders, swinging from vine to vine like Tarzan and even avoiding trap doors. During your journey, you will find extra rocks and elixir to help replenish your supply.

During your journey through *Dark Castle*, you are sure to meet up with trouble. Not trouble in the physical sense of violence, but rather the trouble you get into when you fall through a trap door. You must go through all three levels of trouble, in order for you to have the key to unlock the door in level one (see hints below), and this is no easy task. If you are lucky or skillful enough to get the key back to level one, you may continue your quest.

Comments

Dark Castle is a game of wit, skill, and mostly luck. I am happy to say that I only found one minor inconvenience. Sometimes while playing the game, you can jump to where your feet are half on and half off the edge, and there will be a delayed action. When your guy jumps or falls off an edge, he goes into a routine that causes him to throw his arms up and say "Whooo!" This delayed routine will sometimes happen when you are on solid ground, after coming off the edge as described above.

This routine, is just one of many that your hero does. My favorite is when he bumps into, or hits his head on an object. This causes him to go into a "dazed" routine. He does an about face right, then left, and shakes his head, all while stars are circling above. This is something you must see to appreciate. The other routines are of him running, jumping, climbing, ducking, etc.

If you find yourself not challenged enough (which is virtually impossible), you may choose one of the three skill levels described above. In the intermediate mode, things start to heat up, while in the advanced mode (which should be renamed suicide mode) things are almost impossible. So, even if you happen to be an arcade whiz, you will no doubt find yourself challenged in one of these skill levels.

When you un-box this game, you might be suprised to find only a card for a manual, describing the mouse and joystick controls. However, this is not all the information provided with the game. The info option (described above) provides a more detailed explanation. Perhaps the most unique advantage to having a manual on disk is the way they use graphics taken from the game to help demonstrate what they are talking about.

The graphics, digital speech, stereo

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Reviewed by Steve King

The Director

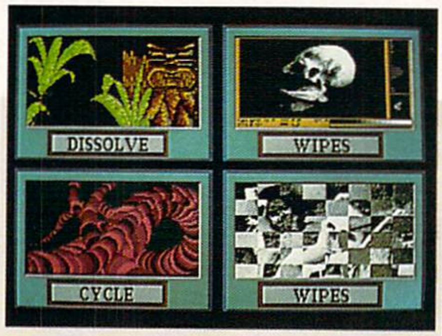
Computer: Amiga
Publisher: Right Answers
P.O. Box 3699
Torrance, CA. 90510
Price: $69.95

Lights, camera, action! Or more appropriately, mouse, IFF files and Amiga! *The Director*, simply speaking, is a powerful graphics presentation system. It enables the unsophisticated user to create professional graphic shows by simply writing a script on any readily available word processor or text editor. *The Director* is not really a program as you might imagine, but a command interpreter much like AmigaBASIC. It converts your script into a filmstrip which can be run with the freely distributable Projector program included on the diskette. The filmstrip displays and manipulates the images, text and sound you specified in your script. The commands are quite similar to BASIC commands, and with a little patience and concentration, they are quite easy to learn.

Unlike the several public domain slideshow programs available, *The Director* permits almost unbounded flexibility in the effects it supports. It will display IFF ANIM files (from programs such as *Videoscape 3D*), IFF ILBM pictures (from programs such as *DeluxePaint II* and *Digi-View*) and will support color cycling. You can use any standard Amiga-compatible font in various colors and styles. It also contains a sound module to play IFF digitized sounds! Finally, it has a shell command which permits you to simultaneously run an SMUS player program to add a sound track to your presentation. Perhaps the best way to describe the program, however, is to step through the makings of a filmstrip.

The first and simplest command is LOAD. This command in its various forms brings pictures, sounds, fonts and animations into areas of the Amiga's memory called buffers. You don't have to remember any memory addresses as the buffers have default numbers from one to 30 for pictures, and one to ten for fonts.

The Director accepts all forms of IFF format pictures, including HAM and 64-color images. The first picture loaded is automatically displayed. All subsequent pictures are loaded into "hidden" buffers



What particularly distinguishes *The Director* from other slideshow and animation programs is its ability to interact with the viewer.

which you can later make appear in various ways. The DISPLAY command makes the specified buffer appear instantaneously.

For special effects, the hidden buffer can FADE in, DISSOLVE, or WIPE, with the speeds and directions controlled by supplying simple parameters after the command name. One powerful feature is the BLIT command which instantaneously permits a selected portion of the hidden buffer to appear at a specified part of the visible buffer. The DISSOLVE and WIPE commands also permit selective transfer of images.

One particularly interesting command is STENCIL. Using this command, you can transfer an image from a hidden buffer to the visible buffer but in the shape of an object contained on a third hidden buffer.

For example, if you want to display a picture frame drawn with a paint program and then slowly dissolve the center portion of a digitized photograph into the frame (which is located at coordinates 50,60 with a width of 100 and a height of 50), the command sequence would appear as follows:

```
LOAD 1, "df1:frame.picture"
LOAD 2, "df1:digitized.picture"
DISSOLVE 2,110,75,50,60,100,50,3000
PAUSE 20
END
```

In this example, the two pictures were loaded and the frame was immediately displayed. Then the digitized picture which was stored in buffer 2 (but was not visible) and was dissolved onto the currently displayed picture at a speed of 3000 pixels per pass. The other parameters in the DISSOLVE command specify that the portion of the digitized picture to be transferred starts at coordinates 110,75, are to be transferred starting at 50,60 of the visible picture (the top left corner of the center frame portion), and the width and height of the transferred image are 100 and 50 pixels, respectively. The PAUSE command displays the second picture for 20 units of time. At that point, the filmstrip ends unless a simple endless loop is programmed to continually repeat it.

Text can be written and displayed on any buffer in any Amiga-compatible font. Up to ten fonts can be pre-loaded into buffers for instant access. The user can set the color and style as well as the text position with the MARGIN and CENTER commands. If the text is written to a hidden buffer, that buffer can be displayed with any of the special effects commands. Similarly, digitized sounds and IFF ANIM files can be loaded into buffers and played with the SOUND and ANIM commands.

The Director also provides a limited set of commands for drawing graphics on any of the buffers. Points, lines, circles, rectangles, ellipses and fills are available. *The Director* also supports use of arithmetic expressions, limited string handling routines and a built-in random number generator.

What particularly distinguishes *The Director* from other slideshow and animation programs is its ability to interact with the viewer. Commands can be inserted at any point during the filmstrip to stop the action and wait for the viewer to either type a response or point and click the mouse. Various logic commands are included to allow interpretation of the input, including the mouse position. The filmstrip will then continue at a specified point in the script depending on the viewer's response.

The documentation supplied with the program consists of a thorough 180-page manual divided into several sections. Aside from a description of the commands (quite similar to the AmigaBASIC manual), there are chapters specifically related to sound, advanced techniques and a tutorial. There are also three filmstrips on the diskette with accompanying script files.

While *The Director* is quite easy to use after some practice, there are several ca-

Continued on page 116

See Commodore Magazine in Booth #418

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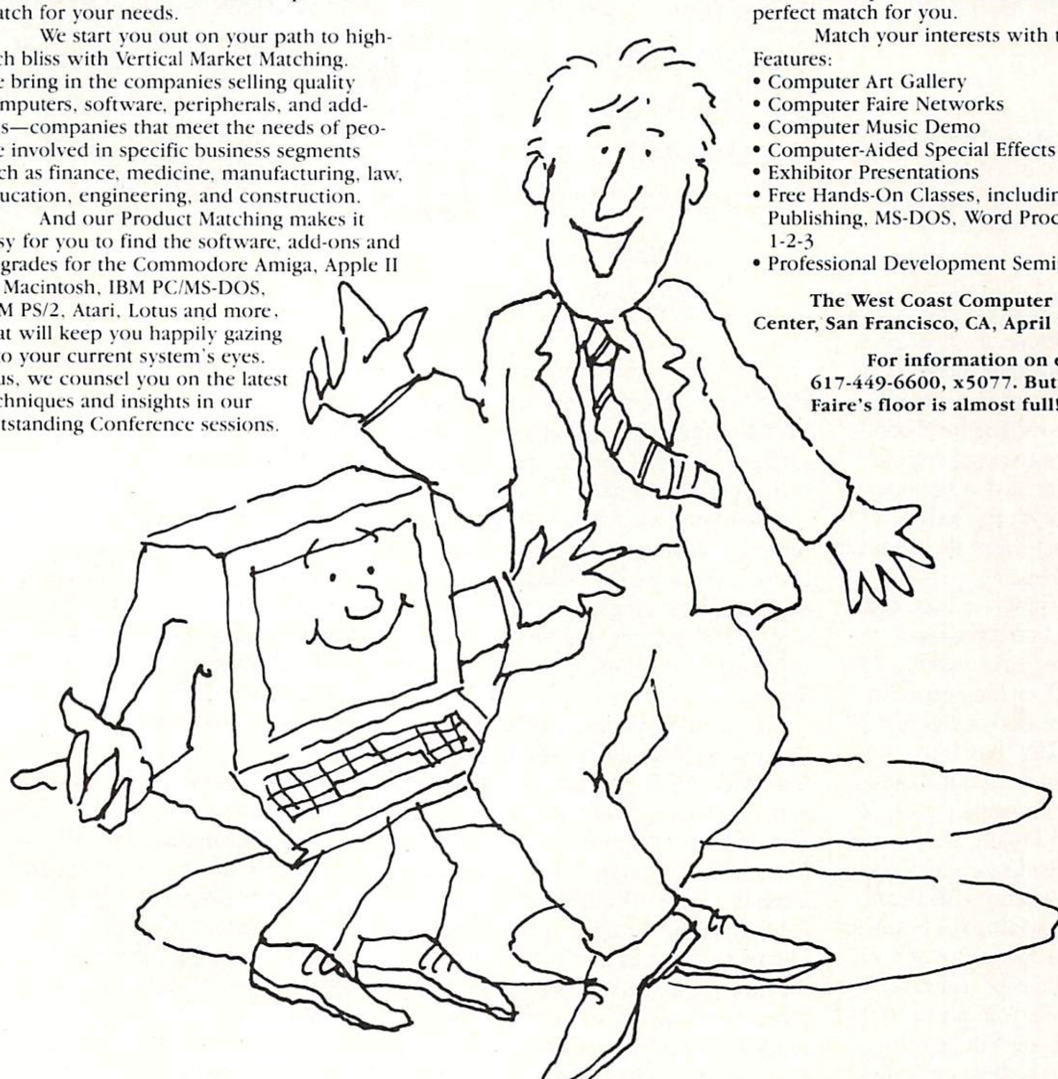
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THE 13TH WEST COAST COMPUTER FAIRE

April 7-10, 1988, Moscone Center, San Francisco, CA

Reviewed by John J. Kottler

AudioMaster

Computer: Amiga
Publisher: Aegis Development
2210 Wilshire Blvd., Suite 277
Santa Monica, CA 90403
Price: $59.95

If you have a sampler, but are disappointed with the software that came with it, don't throw the sampler away, just try *AudioMaster*.



AudioMaster from Aegis Development will let you use your computer as a powerful sampling machine, capable of producing studio quality effects. The Amiga is already capable of sampling sound similar to that of professional equipment, all you need to get started is a sampler and *AudioMaster*. *AudioMaster* is a sampling program which does not include hardware. The program is merely one which offers the user greater flexibility and creativity with creating original digitized sounds. If you have a sampler, but are disappointed with the software that came with it, don't throw the sampler away, just try *AudioMaster*.

After watching the program boot with an animated introduction screen (no doubt created with Aegis *Animator*), *AudioMaster* appears with a blank portion for the waveform to be drawn and several buttons beneath it. More than likely the user would like to sample a sound right away, so the sample command is located in the first drop-down Project menu, where you may also load, save, read about the program, or quit when you've heard enough for one day. Selecting the Sampler option from the menu opens a second window which is an oscilloscope. However, before you start sampling, you must specify what type of sampler you will be using. The drop-down menus change and allow you to pick either a sampler designed for the joystick port or for the parallel port.

Now the computer is configured to digitize from the sampler. Underneath the oscilloscope there are three buttons: Monitor, Sample Lo, and Sample Hi. The monitor option allows you to monitor the sounds coming into the Amiga on the oscilloscope without saving them. This is perfect for making adjustments to the sound before digitizing or for the fun of watching your voice make waveforms on the screen. The two sample buttons begin and end the sampling process. The Sample Lo option samples at a speed of 8363 samples per second, which is the speed required by music programs such as *Sonix*. The Sample Hi option samples at either 14,914 samples per second with a joystick sampler or 19,886 samples per second with a parallel sampler.

Also in this window is a drag bar which controls how long the sample can be in bytes. If you have expanded memory you may sample as long as you have memory to store the sound in! Extra memory is advantageous when manipulating waveforms.

The extra memory makes sampling extremely entertaining as well as productive. With 2.5MB of memory, about three and a half minutes of music may be sampled with the Sample Lo option. With this much memory, I managed to digitize all of a popular song with memory to spare! After plugging numbers into a calculator, I found that you could sample a little over ... Gulp ... sixteen minutes of sound with eight megabytes of memory! Of course, unless you have a hard drive, just forget about saving the waveform.

After you record the waveform the real fun begins. The buttons across the bottom of the *AudioMaster* screen will allow you to change the overall volume of the waveform, set the loop points if you want them, play the waveform, temporarily store the waveform, and zoom in on certain portions of the waveform.

On this screen is the memory counter written in the menu bar and the Display button in the play section. The memory counter shows you exactly how long the waveform is in bytes of memory.

A Display button is located in the play section on the screen. In this section you may elect to play either the entire waveform or just a highlighted range of the waveform, and you can stop the playing at any time. However, the Display button is an additional feature which will trace on the screen where the sound you hear is located in the waveform as it is played.

A Seek Zero button is handy for placing repeat markers. After clicking this button, the computer searches the waveform for the nearest position where there is no sound. This is ideal if you don't wish to repeat a sound during a segment of sound, but only at the end of it.

Editing the Waveform

Once you have selected the range you wish to alter in the waveform, you may then cut that range, copy it, paste that section somewhere else in the waveform, clear the data in that range or edit the range by drawing the waveform with the mouse. From this edit menu you may also erase the entire waveform, place the range cursor at either end of the waveform or replace something you had cut.

Editing, however, is not the most powerful feature of *AudioMaster*; its special effects menus are. The easiest feature in this window is the Backwards command. As you might have guessed, this command will take the data you have highlighted in the waveform and play it backwards! Instead of a snare drum that fades off, you can create a *whoosh* sound that builds.

Another option in this menu is the Low-Pass filter which serves as a treble control and reduces distortion. Another nice feature is the Change Volume function. This little routine will allow you to enter a starting and ending volume and change the ranged area of the waveform accord-

ingly. This is nice for fading out a waveform or merely changing volumes within the wave form.

The Mix Waveforms option will allow the user to mix a waveform or part of a waveform from the copy buffer on top of the waveform at a specified point. The more volume and flange (or slight distortion in this case), the more interesting the effects.

With the Echo option you can range an area of the waveform and echo it as many times as you desire. The rate in which the echoes occur and the rate in which they fade can also be altered to create stunning effects. To top things off, you can even echo an echo!

Finally, the Tune Waveform command will allow you to tune the waveform and reset the sampling rate at which the sound is to be saved. This is ideal for sampling a sound at a very high rate—say at 20,000 samples per second—and changing it to sound the same at 8363 samples per second, or to tune an instrument playing from a recording to a Middle C. (Incidentally, Middle C is equivalent to 8363 samples per second, this is why music programs refer to this rate.)

Among all of its other features, *AudioMaster* allows the user to stop annoying OK Prompts, to stop Cut data from entering the copy buffer when there is already more important data there and to enable or disable the Mix PreScan. The Mix PreScan is an option which determines how much compensation is required when two waveforms are mixed to stop distortion. Of course when you save your sample, you may choose either to save it as an IFF file or a *Sonix* (RFF) file with one, three or five octaves.

You may also save just a portion of the waveform instead of the whole thing. There is also a HiFi Save option which bases other octaves around a sampled sound with a higher sampling rate rather than the lower rate (or target rate) you have chosen to make it compatible with music software. The result is a higher quality sound that will be played correctly in music programs.

Is It Worth It?

Overall, *AudioMaster* is worth the money. The program offers many more features than any other sampling software to date. The fact that it is *Sonix* compatible makes it all the more appealing. Also included with *AudioMaster* are two public domain programs. Joystick Tuner was written by Peter Norman, the author of *AudioMaster* and is a program which will allow you to adjust your joystick sampler to reduce noise.

LED is a program by Mark Riley, the author of *Sonix*, which controls the high-pass filter on the Amiga 500 and 2000 computers, and the LED power light will be turned off to show the program is activated.

If you are serious about sampling sounds on your Amiga, *AudioMaster* is definitely a must. The manual included is concise and offers a brief background on sound, detailed instructions on using *AudioMaster*, and many hints and tips for creating waveforms and even creating a Studio Environment. *AudioMaster* is certainly the master of audio sampling software for the Amiga.

Hints, Tips and Suggestions

Here are a few tips to help you use *AudioMaster* to create fabulous sound effects.

First of all, if you plan on taking "Snapshots" of a waveform to RAM:, the *AudioMaster* disk does not contain the libraries and subdirectories necessary for creating a RAMdisk. The easiest way to correct this slight inconvenience is to copy the following files from the Workbench disk to the *AudioMaster* disk:

```
COPY "WORKBENCH 1.2:DEVS/
  MOUNTLIST" TO "AUDIOMASTER:"
MAKEDIR "AUDIOMASTER:L"
COPY "WORKBENCH 1.2:L/
  RAM-HANDLER" TO
  "AUDIOMASTER:L"
```

If you use a joystick sampler or are finding noise in the waveform and can't seem to correct it, you could highlight the area you wish to be silent and Zero it. This will get rid of the aggravating hiss from the sampler.

You might consider turning off your monitor or any power supplies near the computer, if not in use while digitizing. The audio cables coming out of the Amiga almost directly under the monitor produce an annoying hum which may disappear when the monitor is turned off. Your printer or other devices, especially modems, will also cause a hum, buzz, or tone which will be picked up by the sampler.

Of course, if you have a compact disk player, use it! The quality of the waveform is sharper when coming from a crystal clear sound source.

If you are using a tape, try to use a new portable stereo or stereo system. Don't use a record player or a regular cassette recorder. If you have equalizers, use them as well, they will help clean the sound being sampled. C

Continued from page 42

sound and music in *Dark Castle* are absolutely stunning! It is no wounder that this game is supplied on two disks. You will find yourself challenged at every turn, and with the excitement that builds as you journey along your quest, this will be one that you will want to play over and over again. Add the same excitement you get playing an arcade game, combine it with the strategy of a role-playing game, and you have *Dark Castle*!

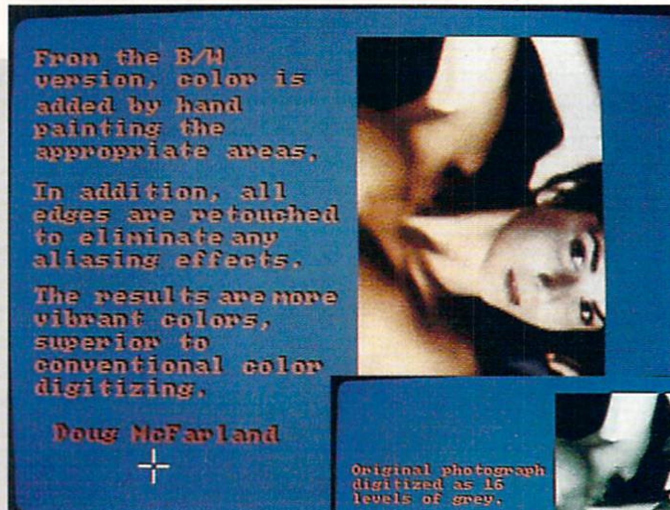
Hints and Tips

- When you get into trouble (which is bound to happen) you will need the key which is located in level three. On this level, you will see a whip-cracking henchman and to his right the captured men he is whipping. To the right of the captured men there are two sets of keys. One set is deadly, and will cause a one-ton weight to come down upon you (ouch!). Before you can get to the keys, you must first get past that henchman. To do so, stand under the mace that is attached to the wall in the lower left corner of the room, and press the joystick (or mouse) button to take it. To activate it you must hold the left mouse button. If you are close enough to the henchman, he will be dazed for a few moments. Stand by a set of keys and watch the prisioners. If you start to grab the wrong one, the prisoners will shake their heads to warn you not to take that one—the other set is the one you need. Now hurry back before the henchman wakes up. Take this key to the top of level one, where the door is located, and you will be free.
- In level two of trouble, you will find two ropes swinging back and forth. To grab on to one of these ropes, you will need perfect timing. When on the right side of the screen, stand on the third brick to the left of the ladder. Now, wait for the rope to come your way, and push the joystick up (or spacebar) two times very rapidly. If done right, you will be on your rope. To switch to the other one, wait for it to cross with your rope, then push the joystick up (or spacebar) one time. Now, you should be on the other rope, and to get off, wait until you are over a safe area and push the joystick up (or spacebar). To do this from left to right, just stand about where you think the third brick should be, and repeat the steps above. If done properly, this will work. Remember, timing is everything.
- Try to locate the FireBalls and the Magic Shield. These weapons will prove most worthy and aid you in your quest. Be agressive, and learn to expect the unexpected. This is the only way to win. C

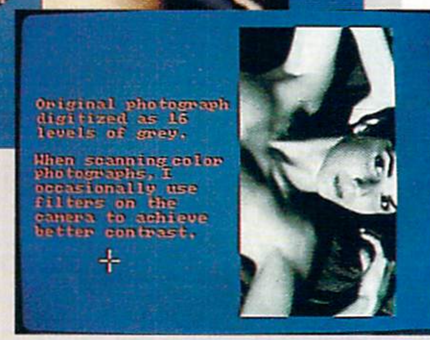
by John Jermaine

Coming Attractions

Spring is in the air. Baseball teams are training, birds are migrating, and software companies are busy releasing new programs. Keep an eye out for these Coming Attractions:



Centerfold Squares



Activision

Amiga: Hear Ye! Hear Ye! A revised version of *The Music Studio* is currently in the works for Amiga musicians. Version 2.0 allows you to change the key signature, tempo and volume of a particular song at any given moment. Other new features include: direct MIDI input to assist in the rapid placement of chords, automatic insertion of measure bars with measure numbers (making it easier to edit, transpose and merge music), and the presence of a jukebox makes it possible to play multiple selections in any given order. By the way, current owners of the program will be able to upgrade their software for about $20. This product is scheduled for shipment this spring, but no revision of the 64 version has been planned.

Beyond Zork (an instant hit with 128 users last fall) will be coming your way in March. To celebrate *Zork's* tenth anniversary, Infocom created this sequel to their classic series of text adventures. True fans of the *Zork* trilogy will not be disappointed. *Beyond Zork* contains more *Zork*-like puzzles to solve, a reunion with some old friends, and a certain degree of role playing.

Artworx

64: *Magic Madness*, slated for shipment in March, is a fresh new face on the game market with a very interesting storyline. Once upon a time, four wise magicians ruled the prosperous realm of Neverland. They maintained order in their land by using the incredible powers of four magic scrolls. One dark day, the evil sorcerer Colo appeared. He slew the four magicians and took possession of the scrolls. Colo feared the magic scrolls might some day be used against him, so he hid them in a multi-level burrow, placing guards around them day and night. An evil shadow had been cast across the land, which come to end the sorcerer's reign of terror.

You're a good witch searching the legendary tunnels for the magic scrolls that are said to be hidden there. Your mystic weapons for this venture include a cross, cape, wand and sand castle. It's interesting to note that one item or several can be used to defeat a particular guard. Determining what works against whom is your biggest problem. Once all four scrolls have been gathered, you can face the might of the sorcerer himself. Liberation day may be close at hand.

Artworx also plans to release a Linkword Hebrew language program during the final days of the first quarter. This product features a 400-500 word vocabulary of common words, with simple ways of remembering each word and its meaning. An audio tape is also provided to help you with pronunciation.

Amiga: *Centerfold Squares* should hit the market about the time you read this. It was designed to generate the same type of excitement *Strip Poker* has produced over the last several years. As the game begins, the player selects an opponent from a list of 12-16 scantily clad individuals (two or three of whom will definitely be male). The graphics of the centerfolds are unique because they're generated by photographing human models. Each model had to be "scanned" many different times, in order to capture the proper pose and facial expression with the camera. This unusual process (called Digitized Plus) is shot entirely in black and white, then the colors are added to the picture by hand. By the way, the finished product looks very realistic.

Getting back to *Centerfold Squares*, it's a challenging game of skill and strategy (similar to Othello in many respects) you play against the computer. It might surprise you that once the contest is over, the fun doesn't end. The final screen of the program contains a barrier of squares and rectangles. Your opponent is hidden behind this wall, waiting for you to make your move. Each block of the barrier can be dissolved by deducting its point value from your present score. On the other hand, your adversary can buy back blocks with his or her points. A game is officially over when the wall is totally gone, revealing the centerfold for all to see (R rated at worst). Data disks for *Centerfold Squares* (containing a new group of opponents) will also be available in the near future.

Coming Soon: Arthur Walsh (President of Artworx) told me about two special Artworx projects: "We're currently re-doing our three *Strip Poker* data disks (for the 64 and Amiga systems) in digitized graphic form. The graphics of the original *Strip Poker* programs will eventually be upgraded in the same manner."

Berkeley Softworks

64: GEOS is alive and well in 1988. During the first quarter of the year, 128 versions of *geoCalc*, *geoFile*, *geoProgrammer*, and *geoPublish* will be introduced to the public. A new GEOS-related product is also being developed for an early spring release. *GeoPAT* ("PAT" stands for Program Authoring Tool) is a special GEOS-based BASIC interpretor and icon-based authoring tool that can be used to generate geoBASIC code. Even though the program was initially created for the educational market, it should be quite popular among GEOS consumers with a yen to program.

Brian Dougherty (Chief Executive Officer at Berkeley) recently told me about the spring debut of GEOS for the Apple IIc and IIe home computers. Believe it or not, you may benefit from this arrangement. All GEOS data files will be portable across both systems. In other words, a *geoWrite* file created on an Apple II will be directly readable by Commodore *geoWrite*. Furthermore, applications developed under Commodore GEOS will be portable to Apple GEOS with a minimal amount of work. As time goes by, products that would have been created for the Apple II computer environment will also become available for 64 users and vice versa.

Capcom

64: Extra! Extra! Read all about it! Capcom declares total war on boring computer games everywhere in 1988. Toward the end of the first quarter, two new home arcade games will be coming your way. If you liked Capcom's *1942* program, wait until you see its sequel (*1943*, of course). You're still a fearless World War II pilot, flying the skies of the Pacific Theatre. This time, however, you face the incredible might of the Japanese fleet at the Battle of Midway. Enemy "Zeros" swarm around you like bees, while imperial carriers and destroyers fire on your position. Naturally the pilot can shoot at the enemy forces, but he also has the option of triggering a tsunami (a powerful tidal wave which temporarily freezes the movement of the fleet). I like *1943* because it allows me to play a game by myself or fly a mission simultaneously with a friend.

Black Tiger, Capcom's other spring release, is the tale of kidnapped children and their father who sets out to find them. Although this game has an oriental setting, actual fighting is done with a series of unusual medieval weapons (as opposed to karate chopping an opponent). Along the way, the user encounters approximately 50 different types of creatures including: giants, giant spiders, bats, vampires, etc. At the end of your journey, you face these ancient terrorists and give them a lesson in "cut and slash" techniques. This program also features multiple levels of play, a large number of variables and plenty of action.

Street Fighter, destined to become a martial arts classic, will be slugging it out with the competition some time in April. Ryu and Ken (recognized experts in karate) are bitter rivals seeking the same title: top street fighter in the world. To prove their superiority in terms of strength and fighting abilities, both individuals are accepting all challenges from around the globe. These matches take place in exotic locations (on the Great Wall of China, beneath the four faces of Mount Rushmore, etc.), while your foes display a variety of unusual combat techniques. Some of these characters are very powerful, in terms of manipulating magic, so don't underestimate an opponent's abilities. Who is the strongest warrior on the face of the planet? Play the game and find out.

Coming Soon: Later in the year, a number of new microcomputer arcade games will surface in your vicinity. Watch for these working titles: *Dog Fight* (May), *Lost World* (August), *Ghosts And Goblins Part II* (August), *Red Storm* (August), *Counter Attack* (September), *Strider* (October), and *Attack Heaven* (November). About five of the titles mentioned above will eventually be available for Amiga users. Amiga versions programs should begin to hit the market by June or July.

Cosmi

64: Cosmi has an interesting slogan: "Tomorrow's Reality Today." Two new programs, destined to come out later in the spring, have their subject matter rooted in today's headlines. When international terrorists take hostages at a top-secret summit meeting, you soon discover *The President is Missing*. Paul Norman (the creator of *Super Huey*, *Defcom 5*, *Chernobyl*, etc.) has you operating the main computer of the CIA's Counter Terrorist branch. Your assignment, during this crisis situation, is to gather facts about the abduction, discard false leads, and make executive decisions that could affect the lives of the captured world leaders. If you come up with all the right answers, the trail will lead to the Middle East, and you'll soon uncover a more sinister plot than the one you're trying to figure out. A 30-minute tape of the kidnapper's demands (containing some additional clues for solving this mystery) also comes in the package.

> Originally titled "U.S.S. Stark," *Navcom 6* is an authentic simulation of the computerized weapons system you'd find aboard a U.S. Navy warship.

Speaking of the Middle East, *Navcom 6* takes place in the Persian Gulf. Originally titled "U.S.S. Stark," *Navcom 6* is an authentic simulation of the computerized weapons system you'd find aboard a U.S. Navy warship. Use your hi-tech surveillance and detection systems to warn you of impending danger as you escort a group of tankers through the notorious straits of Hormuz. AWACS (Airborne Warning And Control System) aircraft and navigational satellites provide inbound up-to-the-minute telemetry reports. Once you judge an action "hostile," activate one of your state-of-the-art weapons systems. The game also contains an accurate representation of a radar scanner, enemy mines to detect and destroy, high speed boats, surface vessels, submarines, missiles, and a clash with the Ayotollah's main strike force. Military-minded game players and simulation people will definitely fall in love with this authentic re-creation of what's going on in the Persian Gulf.

Electronic Arts

Amiga: *Rainbow Road* will finally be released during the second quarter of 1988. Jon Freeman and Anne Westfall are busy adding some new variables to the scheme of things, making the game even more enjoyable and less unpredictable. By the way, *Rainbow Road* was written as a base program. Several sequels to the project (taking place in the same basic universe of worlds) will be developed in the coming years.

Epyx

64: Now here's some exciting news! The United States Olympic Committee recently announced that Epyx, Inc. had been designated an official licensee of the 1988 U.S. Olympic Team. In simple language, this arrangement gives Epyx the exclusive right to develop and market microcomputer, video, and interactive VCR

games bearing the Olympic symbol, logo, etc. You're probably wondering why Epyx would want a broad license of this nature. Part of that secret can now be revealed.

I'd like to introduce you to *The Games: Winter and Summer Editions.* Yes, Epyx (the creators of *Summer Games*, *Winter Games*, *California Games*, etc.) is hard at work generating two new Olympic-oriented programs. *The Games: Winter Edition* will be ready for joystick athletes sometime in March. The events simulated in this product include: Down Hill Skiing, Oval Track Speed Skating, Cross Country Skiing, Figure Skating, Slalom (a down hill skiing race over a zigzag course), and The Luge.

Marty O'Donahue (Vice President of Marketing at Epyx) recently commented on the subject: "Epyx's new line of Olympic projects are substantially different from anything we've done to date. To illustrate my point, let's talk about *The Games: Winter Edition*. It was designed to replicate the true feel and environment of six popular Winter Olympic events.

"In Down Hill Skiing, for example, the player views things as if he were actually competing in that particular event. The user can actually see the contours of the slope and the flags rushing up at him as he travels down the hill. You also have the option of watching your performance, as if a television camera crew were transmitting the event from several different points along the course," O'Donahue explained.

"Oval Track Speed Skating is another challenge where the consumer gets a genuine taste of what it's like to compete in the Olympics. Superimposed around your line of sight is a bird's-eye view of the entire track. This means the user can observe things taking place in front of him, while simultaneously watching the track as a whole (without having to press a key).

"We also consulted experts in the field to make every aspect of the program as authentic as possible. The coach of the U.S. Olympic Luge Team, for example, contributed to the making of that particular event." O'Donahue commented, "Even though I can't discuss *The Games: Summer Edition* at this time, I will say it's coming out in early July and the basic approach of the project will be similar to that of the Winter Edition."

Do you really enjoy microcomputer racing programs? Now don't get mad and tell me they're all alike, because you haven't seen *4X4 Off Road Racing* yet. This unique test of your driving skills dares you to control an off-road vehicle in a race against the computer. Four types of hostile terrain are faithfully re-created in this action-packed simulation (these environments range from hot sandy deserts to a region of ice and snow). The user also has the option of customizing his vehicle with a lot of special equipment. In the Baja race, for example, you can install several different types of tires on your vehicle. Night will also present some interesting problems in one of the scenarios. This product should be rolling off the assembly line during the early days of March.

The *Home Video Producer* is another piece of software you'll see on the market this spring. This product allows you to enhance your Camcorder home videos with 75 full-color graphics, ten different type faces (for adding titles and text to your work), and ten unusual border designs. You can even animate some of the graphic designs or create several interesting special effects. Every aspect of the *Home Video Producer* is user friendly and geared to the needs of the mad home video photographer.

Epyx recently signed a contract with *Sporting News* magazine to bring you *Sporting News Baseball.*

Epyx recently signed a contract with *Sporting News* magazine to bring you *Sporting News Baseball.* The program is an interesting blend of fast action arcade-style baseball and the actual statistics of all your favorite players. If the user (in a moment of insanity) decides to coach the Chicago Cubs, he must fill the roster by carefully examining individual batting averages, pitchers' earned run averages, and so on. All player statistics are carefully factored into the game, so Andre Dawson has a better chance of hitting a home run than Jody Davis or Keith Moreland (two of his teammates). It's also possible to take a team at random and re-structure the roster with players from other teams or the Baseball Hall of Fame. Yes, *Sporting News Baseball* has the statistics of 150 Hall of Fame celebrities, along with the numerical records of every major ball player on all 26 American and National League teams. The Epyx umpire yells "Play Ball!" during the month of March.

Street Sports Soccer, the third installment of the Street Sports series, is scheduled for release in April. *Soccer*, like the earlier programs of the series, is patterned after the kind of sport you'd play with friends in a vacant lot. The user selects his two teammates for the game from a group of kids with different abilities. You also have the option of playing on grass or hard pavement. I really enjoy this type of challenge because it combines the fun of athletic competition with a bit of nostalgia thrown in for good measure.

As I wrap up this preview of Epyx software, I'd like to tell you about *L.A. Crack Down*. This new edition of the Masters Collection follows the exploits of a vice squad unit trying to break up a drug ring. This off-beat graphic adventure, featuring a lot of excellent animation, challenges you to gather clues, make decisions, and bring the criminals to justice. Consumers can be sworn in for this assignment in April.

Amiga: Amiga versions of the titles mentioned above should be available within several months of 64 product releases.

Coming Soon: Late in the spring, Epyx plans to introduce two new 64 games to the public. *Deathsword*, the number one computer game in Europe, is destined to become an American classic as well. The object of this contest is simple: face your enemy with sword in hand, keep him off balance as much as possible, and use your weapon to chop off his head (if an opportunity arises). This clash of the Conans was initially designed for the younger audience (8-14 years old), but adults will appreciate the program's fast action, quick responses, and colorful graphics.

I'm also happy to announce the coming of *Impossible Mission Two*. It seems that Elvin (the evil genius of the previous game) is once again on a rampage, and you're the only one who can stop him. This time his headquarters is located in the Bonaventure Hotel of Los Angeles. Your job consists of locating, entering, and deactivating Elvin's central control room, before the mad scientist can reap his revenge on the world. Once again you have to search for pieces of a top secret security code, solve several mind-boggling puzzles and outsmart a number of robot guards. If you like to exercise your mind as well as your hand, *Impossible Mission Two* will give you a real workout.

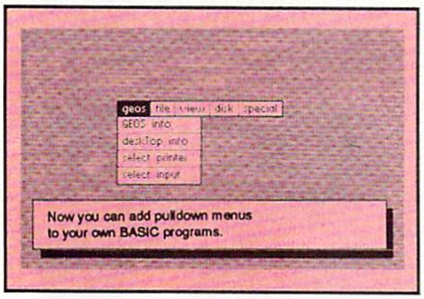
Hi Tech Expressions

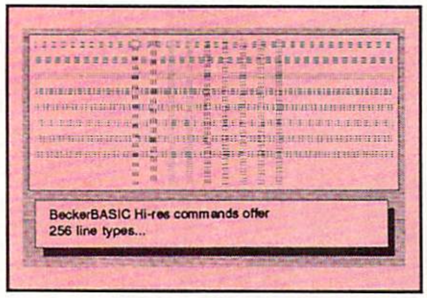
64: Do you like to print signs, cards, multi-line banners, etc.? If so, keep an eye out for *PrintPower* at your favorite software store. *PrintPower* (making its debut

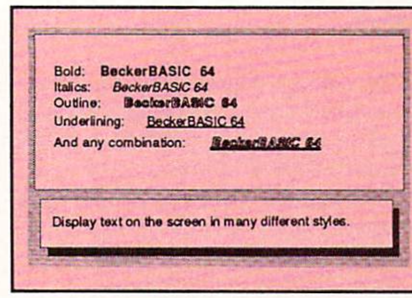
Continued on page 54

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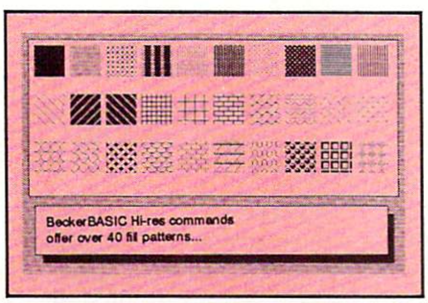
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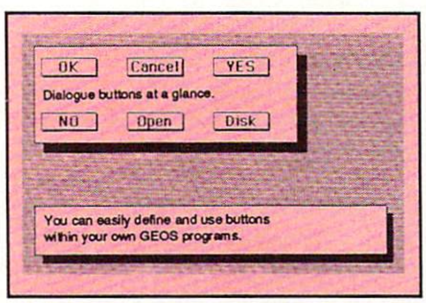
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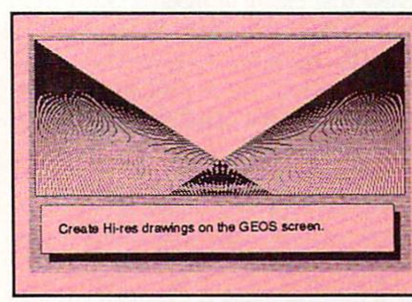
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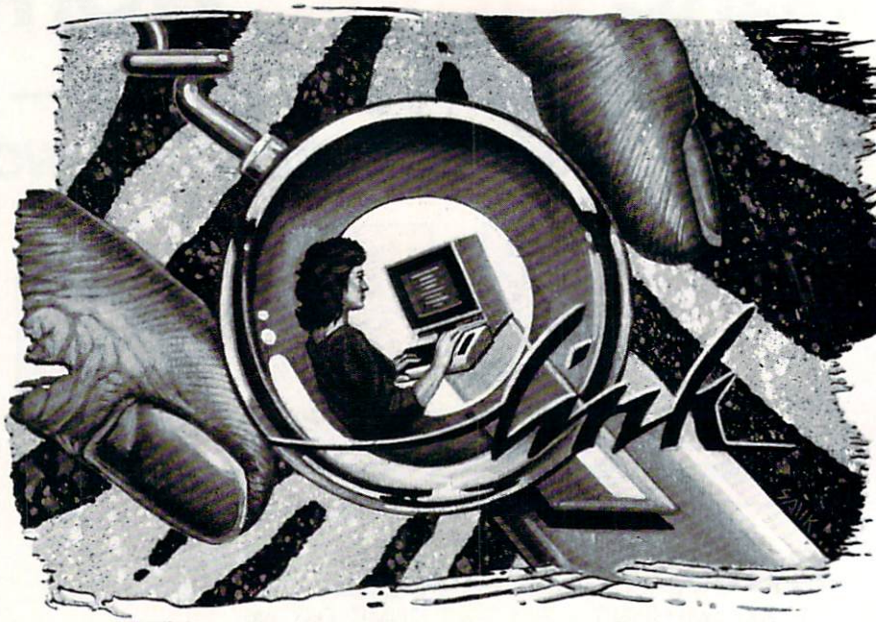
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by Robert W. Baker

Inside Q-Link

Explore the inner workings of the Q-Link telecommunications service with network pro Bob Baker.



ED SAUK

The message editor on Q-Link seems to keep coming up these days. Recently, one of the other sysops pointed out the fact that there is another way to invoke the various message board editor modes and functions. Once you know the secret, it makes the editor much easier and faster to use with a few simple commands.

Normally, you'd press the F7 key to display the menu of available editor actions, select the desired option with the cursor up/down keys, and then press F1 to perform or select that menu action. Well, it turns out there is another, simpler way to select all of the options except for sending the completed message to the system.

You see, each available option has a corresponding CTRL key sequence that will invoke that option or mode directly, without displaying the menu. You simply hold the CTRL key down while pressing the correct letter for the desired action. If you can remember the handful of letters, it's really pretty easy.

You won't find these documented anywhere that I know of. Here's a list of the control codes for those who would like to take advantage of this hidden feature. You'll find that most of the functions use the first letter of the option with few exceptions.

The first, and easiest to remember, are CTRL/I for Insert mode and CTRL/O for Overwrite mode. These select how the editor will function when you type text within a message. Remember that in Insert mode, existing text is moved down as new text is entered. In Overwrite mode, new text replaces existing text one for one.

CTRL/P is used for the Put Mark function, to activate the Block Mark mode without displaying the menu. Once this mode is entered, you can mark the desired range of text using the cursor keys as usual. When you're ready, press F7 to display the menu that allows you to delete or save the marked block, or exit the block mode. But guess what, even these options have corresponding CTRL key sequences.

While in the Block Mark Mode, CTRL/D will delete the currently marked block and save a copy in an internal buffer. Pressing CTRL/C will copy the currently marked block to the internal buffer without disturbing the existing text in the message. This is the normal Save Block function shown in the menu, but thinking of it as a Copy makes it easier to remember the letter "C" for the command. If you want to exit the block mode without disturbing anything, use CTRL/U.

The Append Text function is normally used to copy the last block of deleted or copied text from the internal buffer back into the message text. The text is inserted at the point where the cursor is positioned when the append fuction is selected. Selecting this function from the menu is sometimes confusing, but you can simply press CTRL/A to do the same thing without having the menu in your way.

The two line delete functions also have corresponding CTRL key sequences. CTRL/L provides a very quick line delete function. It simply deletes the entire line the cursor is currently positioned on. It doesn't matter where the cursor is positioned on the line, everything from the start of the line is deleted.

Pressing CTRL/E provides the Delete to End of Line function. Everything from the current cursor position to the end of the line is deleted, so be sure the cursor is correctly positioned. Any RETURN character at the end of the line will also be deleted and the following line will be combined with the remainder of the original line. You might want to think of this as an ERASE function to correspond with the letter "E."

As you can see, most of the commands are pretty simple to remember:

Main Commands

CTRL/L — Delete Line
CTRL/E — Delete to End of Line
CTRL/P — Put Mark
CTRL/I — Insert Mode
CTRL/O — Overwrite Mode
CTRL/A — Append Text

Block Mode Commands

CTRL/D — Delete Block
CTRL/C — Save (Copy) Block
CTRL/U — Exit Block Mode

If you use the message board editor much, you'll find these commands very handy. Just keep in mind that you'll still have to use the menu to transmit the finished message when you're done. There is no CTRL key sequence for this function to protect against an accidential transmission of a message before you're really done.

As I've mentioned several times in the past, don't be afraid to wander around the system once in a while. You might just stumble across something you never knew existed. There's always so much going on that it's almost impossible to keep up on everything. If you don't do a little exploring on your own once in a while, you might miss out on something really worthwhile.

Remember that the system is very dynamic and there is always work going on, and features are constantly changed or added. You'll find announcements of the major changes in the monthly Q-Link Update guide, along with information on upcoming events and other interesting hap-

Continued on page 54

Continued from page 52

penings around the system. The newsletter tries to keep us informed of the major items, but we have to dig out the smaller things for ourselves.

Even though we can only access Q-Link with a 64 or 128 at present, Q-Link does support Amiga and even PC-10 users with information on their systems and related products. If you drop by my New Product Information section of CIN, you'll notice special areas for information on products and services for each of the current Commodore systems: 64, 128, Amiga and PC-10/MS-DOS. The information seems to come in waves, so be sure to check for updates every once in a while. I typically post press releases within one to two days after they're received.

The download library in the New Product Information section was split up several months ago to separate the Amiga files from the other available files. The sheer size and volume of Amiga-related files was starting to overwhelm the original single library area. We've even started to provide a few PC-10/MS-DOS related files in the library as well, so don't be surprised if you see a separate library for those files some day soon too.

Before I wrap things up for this month, I'd just like to pass on a word of caution for using the Classified section of the Mall on Q-Link. A few users have lost money on bad deals, or even lost equipment they intended to trade in good faith. Be sure to use common sense and be careful in your dealings with used software and equipment. Paying C.O.D. can help protect you, but you still have no guarantees that you'll get what you bargained for.

There are true bargains to be had in the classifieds, and the system does work most of the time. But it only takes one bad deal to wipe out any savings made on all your other bargains. If you do unfortunately run into troubles, be sure to let others know by posting information in the classified section as a warning. I've used the classifieds successfully myself for both buying and selling, so I know it can work nicely if both parties cooperate. You just have to be a little careful with whom you're dealing.

As usual, please let me know if you have any comments or suggestions for this column. I'm always looking for ideas for future columns and much of this material comes from your comments and questions. You can reach me almost any day via E-Mail to RBAKER, and your input is always appreciated. ■

Continued from page 50

during the first quarter of the year) is compatible with Hi Tech Expression's Awardware program. It also features 60 new graphic designs, 40 different borders, six fonts (each with seven variations), and three different type sizes.

Shortly after *PrintPower* becomes available to the public, a companion program (tentatively titled the *PrintPowerPak*) will be making its appearance. This product will contain a number of new graphic designs, with a calendar function that allows you to generate your own personal monthly calendars. By the way, both of these products contain totally new graphics not available in previously released Hi Tech Expressions software.

Sierra On-Line

Amiga: *Thexter*, Japan's number one arcade game, should be on the market by the time you read this. In the game, you assume the role of an advanced robotic assault vehicle, trying to locate and destroy an evil super computer. As you search for your foe, the player encounters over 20 forms of hostile alien life. If do you run into trouble, your robot can transform into a jet aircraft and fly away from danger. Your other option allows you to blast your foe with a lethal barrage of high-energy lasers. The program also contains a 16-level world to explore, booby-traps, dead ends, and plenty of arcade action.

> *Police Quest: In Pursuit of The Death Angel* should also be available during the later half of the first quarter.

Police Quest: In Pursuit of The Death Angel should also be available during the later half of the first quarter. This program (authored by a retired highway patrolman) is the story of small town policeman, trying to stop a major drug operation and the other crimes that occur in his community. *Police Quest* is another 3D animated adventure game (like *King's Quest*) that teaches you how to follow correct police procedure. A wise player will study the city map (containing over 100 streets and four highways) to become familiar with his territory. The package also contains a complete policeman's indoctrination manual, which explains everything a good cop really needs to know. Before long, I'm sure you'll find a way to put the *Death Angel* behind bars.

Speaking of 3D animated adventure games, *Space Quest II* is also in the works. Some time has passed since Roger Wilco became the galactic hero of the Sarien Encounter. Tired of being an outer space adventurer, Roger has returned to what he knows best: being a professional sanitation engineer and all around good guy. Just when you least expect it, Sledge Vohaul suddenly re-appears (vowing to get revenge on our hero and the people of the known universe). Prepare yourself for the invasion of the insurance salesmen. Vohaul has released thousands of life insurance salesman clones on the unsuspecting world of Xenon. These pushy characters won't take no for an answer, you can't get rid of them, and they follow Vohaul's every command. Graphic adventurers can tackle this fiendish plot during the early part of March.

Roberta Williams, author of the *King's Quest* saga, is preparing to unveil a new problem-solving program for children (between the ages of three and eight). As *Mixed-Up Mother Goose* begins, your child has literally drifted off to Dreamland. It seems that items and characters (from 18 popular nursery rhymes) have been scattered across the land, so he or she has volunteered to help Mother Goose restore them to normal.

Mixed-Up Mother Goose also allows the young player to customize his or her character with some personal information. The program asks you for your name, hair color, skin color, etc. Up to 12 individuals can participate in this fantasy adventure, and the package contains a full-color map of Dreamland, with pop-out windows that reveal all the delightful characters of the game. I believe this product is destined for greatness because the graphics are excellent, every playing of the game is different, you operate the program with easy-to-use pull down menus, and most kids are fond of Mother Goose in general.

Coming Soon: If you like Japanese arcade games (like *Thexter* for example), Sierra will be introducing *Siltheed* to the market in the fall. Once again, it's a fast action shoot-'em-up type of program.

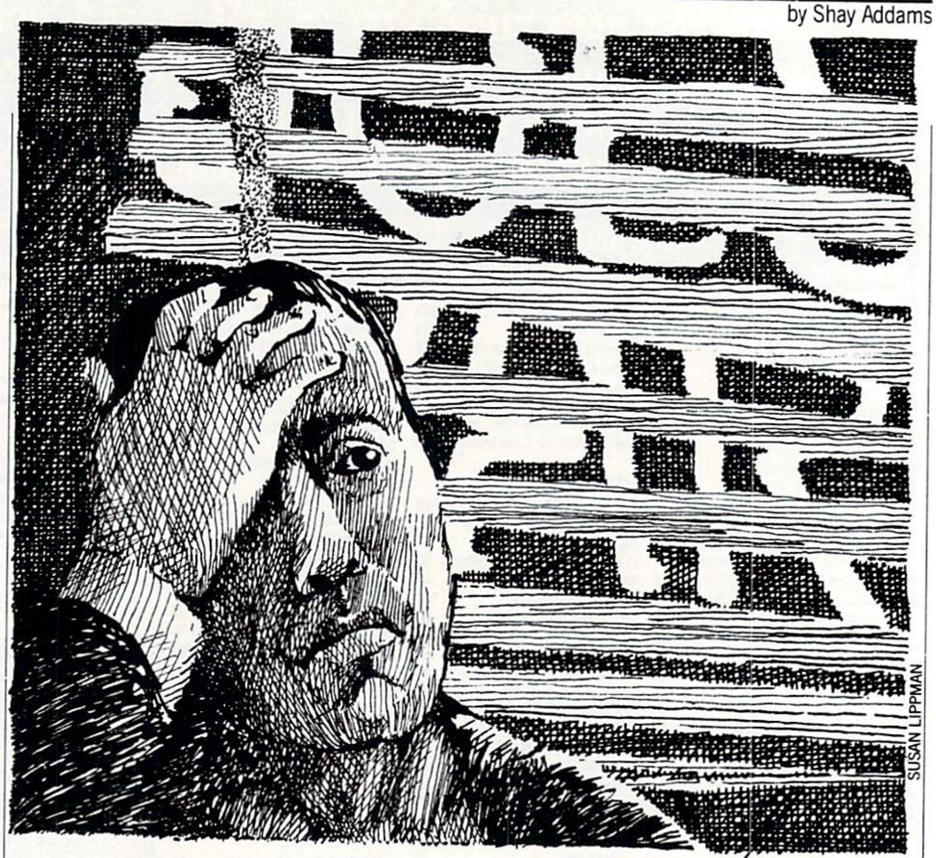
Timeworks

64: Timeworks' *Desktop Publisher* will finally be released at the end of the first quarter. Some readers will assume that the project is simply behind schedule, but I hear (from a reliable source) that Timeworks is busy adding some additional new options to the scheme of things. I'm sure this program will be worth the wait. ■

by Shay Addams

I Have the Strangest Feeling I've Played This Game Before

News and opinion from a leading explorer of those fantasy realms called adventure games.



Recently converted for the 64 and Amiga, *Deja Vu* brings back fond memories to this Adventurer (but not many, since I'm still working with a 2K brain). Originally written for the Macintosh in 1985, this icon-based adventure takes place in Chicago in the '40's. After being drugged by persons unknown, you wake up in a dingy men's room in Joe's Bar. Besides a headache, you're suffering from amnesia—but learning your identity can wait.

First you've got to find an antidote for the drug, or you'll black out and wake up in the local funny farm. (Special effects show the screen fading and flickering as you lose consciousness.) Unless the cops get you first, in which case you'll go to jail for murder—a body lies sprawled across a desk on the second floor of Joe's Bar. The Amiga version is essentially a color rendition of what was a black and white game on the Mac, but some modifications were made in the interface of the 64 version.

Instead of typing "get the wallet," you click on its icon in the picture (using a joystick on the 64 or mouse on the Amiga) and then move it into your inventory window. Other common commands are accessed by clicking in their boxes in the menu at top-screen. One of these opens a window into which you can type a sentence if necessary in certain situations, but most of the time you'll be manipulating icons instead. You can use an object by clicking on the "operate" command, then on an item such as a key and finally on the thing you want to use it on, perhaps a door or padlock in this case. In all versions you can open a separate window for each object that can contain other objects, things like wallets, coats and so on.

The main difference between the 64 and Amiga versions is the way windows are handled. On the Amiga you can resize windows and move them anywhere on the screen. But on the 64, only the main inventory window and two smaller ones may be visible at once, and none can be resized or moved. You can scroll a window in either direction to view its contents, but things could get sticky when you need to have open more than two windows at once.

To deal with this situation, the 64 version automatically labels each window with a letter when it's first opened; these letters appear in a vertical line on the right side of the screen. If you've opened the trench coat (B) and a wallet (C), then decide to open the gun (D), the gun's window replaces (C). To bring the wallet window back, you click on the (C) on the right side. It's an ingenious way of solving what must have been a major obstacle for the programmers working on this conversion.

Disk access on the 64 is a relatively brisk nine seconds when a new illustration is loaded, and you can move the cursor while waiting. This is convenient, enabling you to position the cursor over a word in the menu or an object to be ready to go. A small window at bottom right shows all exits, and you can click on one to go through that door. It's not exactly automapping, but is useful because occasionally some of the exits will be blocked by a window or simply not displayed.

A diverse range of fill patterns and imaginative visual effects bolsters the excellent graphics on both versions. There are no sound effects on the 64, but you'll hear a few on the Amiga. The 64 version covers both sides of one disk and runs in 64 mode (no auto-boot on a 128). I highly recommend *Deja Vu* for all disk drive detectives and anyone who wants to try a whole new style of graphic adventure. Also look for Icom Simulations' other icon-based games soon: *Uninvited*, a horror story, and *Shadowgate*, their magic and monsters adventure.

Jewels of Darkness

I was also struck by a sense of deja vu when I played *Jewels of Darkness*. It's a three-game package brought over from England by Firebird for the Amiga and 64. All were originally text adventures by Level 9 Computing, but optional graphics have been added. The feeling I had played the games before (or at least the first one) first surfaced when I read the name: *Colossal Adventure*. *Adventure*, the game that started the all-text genre and gave it the name, unfolds in a mammoth cavern named Colossal Cave.

And *Colossal Adventure*, it turns out, is really just a revamped version of Crowther and Woods' game, one that doesn't even bother to mention *Adven-*

Continued on page 113

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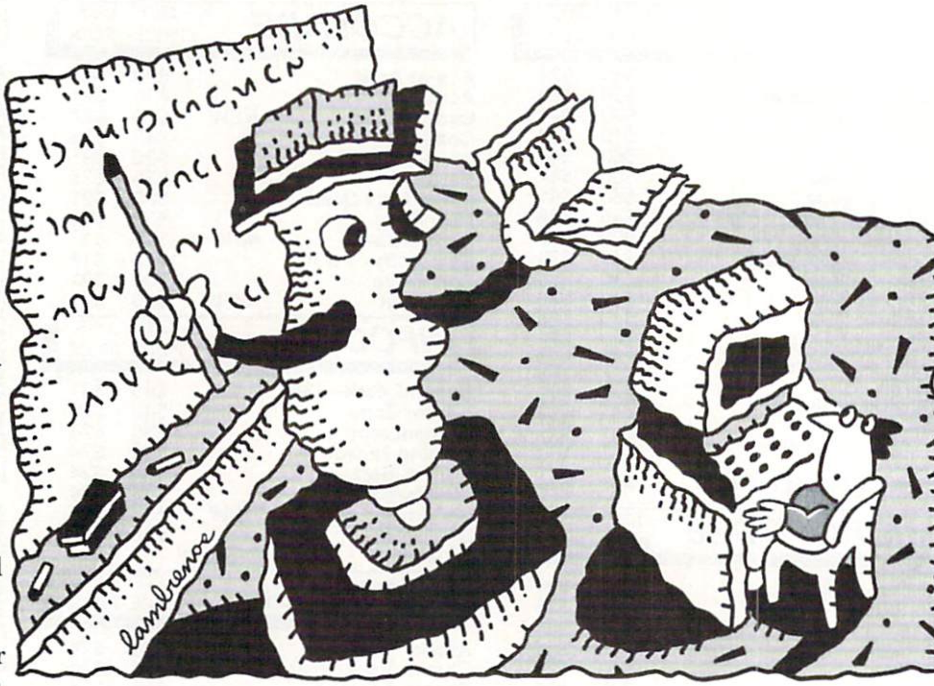
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by Neil Ludban

How to Program with your Joystick

for the Commodore 64



JIM LAMBRENOS

When I bought a joystick to play computer games, I wanted to try to use it in my programs. Even though I looked just about everywhere, I couldn't find any applications, until I read the *Programmer's Reference Guide*. It tells all about programming with the joysticks, but it isn't the easiest thing to understand, so I'll try to explain so that you can understand a bit better.

First I'll tell you a little about how your joystick works. Inside the joystick are five switches, one for the fire button and the other four for directions. The fire button switch contacts when the fire button is pushed. When you move the joystick, one or two switches contact. If you move it at an angle, two switches contact, if you move straight forward or backward or to the sides only one switch contacts.

When you push the joystick north, the north switch contacts; if you push the joystick east, the east switch contacts, so if you push the joystick northeast both the north and east switches contact.

By means of the wire connected to the computer, electrical pulses are sent from the computer to the joystick and back again by different wires, depending on which switches are making contact. The computer stores a number in register 56320. You can have a line in your program saying "A=PEEK(56320)". Of course, it can't be that easy, and it isn't. Some crazy number is stored in the register, and you have to get it straightened out. You do this by having a line after peeking the register that says "A=15-(A AND 15)". Now you have a number in A between 0 and 10. The chart below shows what each number stands for.

A equal to	Direction
0	none
1	up
2	down
3	—
4	left
5	up and left
6	down and left
7	—
8	right
9	up and right
10	down and right

There are many ways to use these numbers. I use "ON A GOSUB 10,20,30,etc." To use this method though you have to have a line before that which says "IF A=0 THEN —" because the program will crash if A is equal to zero and the GOSUB line is run.

To find out if the fire button is being pushed you have to add another command. Now your whole line looks like this: A=PEEK(56320):B=A AND 16:A=15-(A AND 15). If B=16 then the fire button is not being pushed. If B is not equal to 16 the fire button is being pushed and you would want your program to fire. To check the fire button you need a line saying "IF B<>16THEN —".

If you want to use both joysticks in your program instead of using 56320, the register of the second port, use 56321, the register for the first port. Everything else stays the same. If you are only using one joystick be sure to use the second port, since the first port interferes with the keyboard input.

The sample program that I have written forms a simple sprite on the screen that will move in all directions and return to the opposite side of the screen when you run it off the edge. When you press the fire button the screen background changes colors. ■

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

Joystick Demo

```
20 PRINT"[CLEAR]"'BATY
25 V=53248'BGOF
30 POKE 53280,0:POKE 53281,0'CPLD
40 FOR A=12288 TO 12350:POKE A,255
   :NEXT A'FTNG
50 POKE 2040,192:POKE V+39,1
   :POKE V+21,1'FUEI
60 POKE V,24:POKE V+1,50:R=24
   :D=50'FSYJ
70 A=PEEK(56320):B=A AND 16
   :A=15-(A AND 15)'HWLM
73 IF B<>16 THEN GOSUB 730'FGBK
75 IF A=0 THEN 70'DEMK
80 ON A GOSUB 150,200,250,300,350,400,
   450,500,550,560'CPDM
90 GOTO 70'BCOF
150 D=D-1:GOSUB 600:POKE V+1,D
   :RETURN'GNWG
200 D=D+1:GOSUB 600:POKE V+1,D
   :RETURN'GNVC
```

Continued on page 109

by John Iovine

Dynamic Equations: The Beginning of Fractals

for the Commodore 64 and 128

Standard geometry is limited in its ability to describe many of nature's forms. Landscapes, mountains, clouds, coastlines all exceed the functions of standard geometry. Nature does not limit itself to the standard geometric forms such as cones, circles, straight lines and triangles.

Fractal equations graphed on computer screens can mimic nature's forms. Many popular motion pictures contain fractal landscapes and planets. How do fractal equations generate images that mimic nature's forms? What are the unique aspects of these equations?

This is what we will start to explore. We will not provide the definitive answer in this article. We will, however, begin to build a foundation that is understandable, comprehensive and, most important, can be built upon. I feel this is better than throwing out numerous equations and concepts and expecting you to understand. That approach would most likely obscure rather than illuminate the mathematical concepts we want to explore.

Beginning of Chaos

Dynamic equations are self-modifying equations. Meaning that the answer obtained from the first pass through the equation is fed back into the beginning of the equation and repeated (Figure 1). We start with a seed value for X, calculate through the equation, then use the results X for the next iteration. It is most convenient to graph each iteration on our computer screen. This way we can see the results of each iteration more clearly.

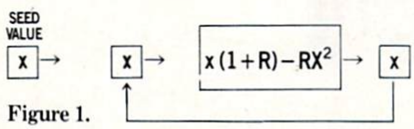


Figure 1.

This type of equation was first defined by P.F. Verhulst in 1845 for growth limitations. He asserted that a given niche can maintain a certain optimum maximal population, (let's call this number X). Also, as the population approached X the growth rate factor (let's call this number R) would decrease. This produces a dynamic non-linear equation with a variable growth rate. At high growth rate factors, however, the equation produces catastrophic consequences (chaos).

Population Growth Model

The Verhulst equation can be broken down into two main functional parts. The first part $(1+R)X$ is the growth factor. We can see that in each iteration X is increased by itself (X times 1) and the growth rate factor (X times R).

To limit this growth at 1 (the optimum population size) the second half of the equation (-RX ↑ 2) varies with the value of X to bring the value of X to 1. This second half of the equation works well for low values of R (small growth rate factors). But as we shall see as R is increased, the equation begins to oscillate, first between 2 points, then 4 points, then 8, 16, and quickly into chaos. When the equation enters chaos, it means we have come to the end of predictability. It is no longer possible to predict the results of the equation except by letting it run. Before we continue our discussion on chaos, let's first graph our population growth model equation.

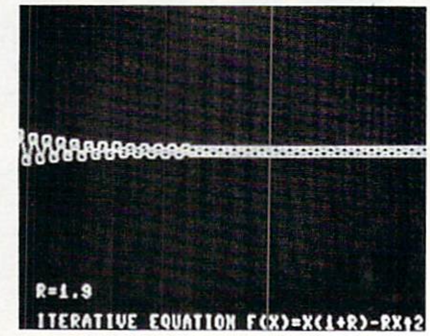
Graphing Programs

The photo illustrations accompanying this article are screen images from the 128. I have included a bit-map plotting routine for the 64. This routine plots the identical image for the Chaos 2 program as the 128. For the Chaos 1 program though, we are plotting dots without the connecting lines, therefore the screen images will not look the same as in the photos. You should be able to derive the same idea from the plotting. For 128 users consider running your computer in the 64 mode with the 64 programs. Although the images aren't as clear or dramatic as the 128 you can see how the program plots the equation with points, as this is the method used with both programs to plot Chaos 2.

For the 64 users enter and run the 64 plotting routine before entering either of the chaos programs. Save the program before you run as it erases itself from BASIC.

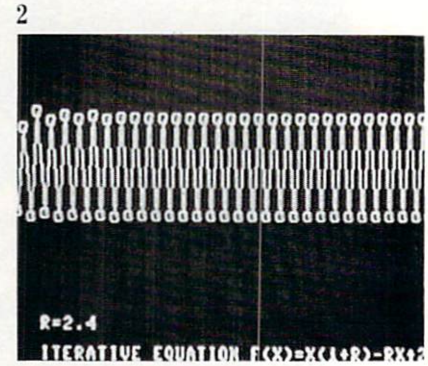
Enter Chaos 1. When you run this program it will prompt you for the growth

1



rate factor. Enter 1.9 for our first test. Observe the results on your screen. After the program is finished plotting, your screen should look like photo 1. Notice as the program is plotting, it approaches the value 1, overshoots slightly, compensates, undershoots, compensates, etc. These oscillations dampened until it reaches an ap-

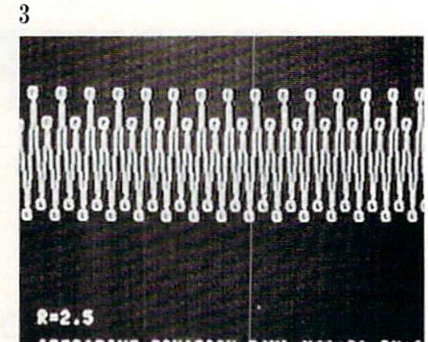
2



proximate value of 1. Consider the value 1 as the attractor at this point (growth factor) in the equation. The beginning oscillations are transient values the equation will go through before it finally settles on its attractor.

Run the program again and enter 2.4 at the prompt (photo 2). Notice how the oscil-

3

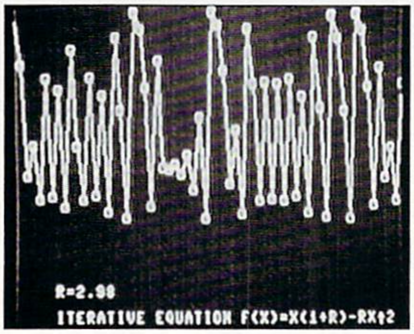


Continued on page 62

Continued from page 60

lations do not dampen, they continue indefinitely (photo 2). It is no longer possible to reach the first attractor (optimum size of 1 for the population). The program at this point has two attractors. The value of

4



X printed on your screen and displayed graphically.

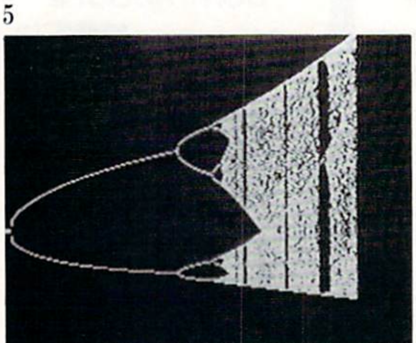
Run the program again and enter 2.5 at the prompt. The program oscillates at four points (photo 3). Each one is an attractor.

Run and enter 2.96 (photo 4). The program has entered chaos. The value of X jumps all over now. It is no longer possible to predict the value of X at any iteration except by letting the equation run to the point in question.

Order Out of Chaos

Enter and run program 2. Program 2 takes an hour or so to run. If you're using the 128 you can enter the fast mode and

5



cut your time in half. I'm sure you're aware that once you're in the fast mode your graphic screen is blank, and you will have to return to the slow mode after completion to view the results of the program.

Let's analyze the equations in program 2 and look at the results of the program (photo 5). First notice that we are using the same equation as in program 1 and that we have this equation repeated twice within the program. The first section of the program goes through 275 iterations to dampen the random oscillations (transients) as noted in program 1, test 1 (photo 1). After the transients have settled we then go to the second half of the program, using the same equation and plot the next 200 points. These points are the attractors. Next the program increments R by .0035 and repeats the process.

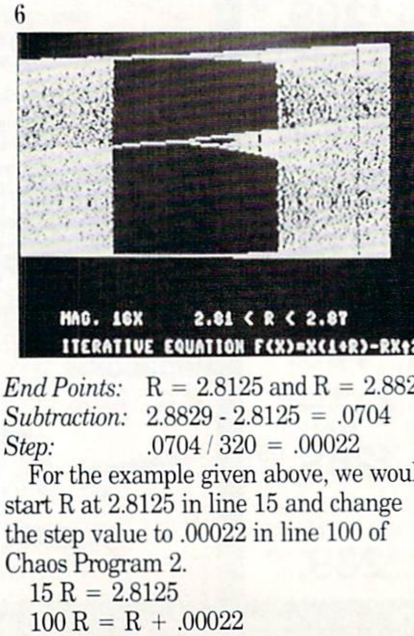
We can see that when the program begins, it is plotting a single attractor analogous to test 1. The program continues incrementing R and plotting the attractors. This plots as a single line across the screen. When R reaches its first critical point it branches into two points or attractors, analogous to test 2. This is plotted as two separating lines. As R is increased the branching spreads further apart until we reach the next critical point when the equation begins oscillating between four point and thereby branches into four lines, analogous to test 3. Enter chaos.

Self-Similarity

If we take an overview of the entire bifurcation (branching), interestingly, there appears to be a pattern to the chaotic dynamics of our non-linear equation. In addition, the overall pattern is repeated in the matrix of chaos. This paradoxical organization is our starting point of fractals.

We can magnify portions of our equation to observe the self-similarity by setting the value of R between two points we wish to examine, then adjusting the step value of R to give a full screen image. This is accomplished by dividing the difference of R (endpoints) by our resolution in the X line (320). This number is the step value used to increment R. Doing this, the entire field of view or screen image will begin at the first endpoint and end at the second. (See example below.) With our magnified portion we can see how the overall pattern repeats (Photo 6).

6



End Points: R = 2.8125 and R = 2.8829
Subtraction: 2.8829 - 2.8125 = .0704
Step: .0704 / 320 = .00022

For the example given above, we would start R at 2.8125 in line 15 and change the step value to .00022 in line 100 of Chaos Program 2.

```
15 R = 2.8125
100 R = R + .00022
```

Nature

Self-similarity in nature appears to be the rule, examples are abundant everywhere. Let's look at a few. Leaves on a tree are self similar. They all have the same shape and structure and are replicated thousands of times on each tree. Branches or branching although not identical follow the same basic rules. If you look at the branching of a bare tree and then compare it to branched structure of the human bronchial system of the lung, you will see the amazing similarity.

Usefulness

You may think that the Verhulst dynamic equation is useless outside of being a mathematical exercise. After all where do we ever find a growth rate of 200% or 300%? The human population? No, of course not, but in insect populations, yes. The equation predicts these growth populations.

Also bear in mind that although the equation is striving to reach the optimum value of 1, the number 1 can represent any value such as one million or one billion. Remember the variable growth rate (R) is positive when X is less than 1 ($X<1$) and negative when X is greater than one ($X>1$). The positive value (R) represents population increases, the negative value (R) represents population decreases. One way to look at population decreases is that when the population has exceeded its optimum size of 1, the decrease (increased death rate) could be attributed to the depletion of food supplies or from diseases in an overcrowded environment.

Dynamic equations have much broader applications elsewhere. In physics they have been used successfully for theoretical work in lasers, kinetics of chemical reactions, and hydrodynamics. Other fields include economics, electrical response of cardiac cells, feedback control of electronic circuits and, of course, quantum mech.

Fractals

The Verhulst equation is very similar to fractal equations. They operate the same way. The difference is that the value R in our equation is a real number, in a fractal equation it would be a complex number. A complex number consists of two numbers, a real and an imaginary number. I do not want to go any further than this. We have just scratched the surface of dynamic equations. Other areas of research and interest are Fibonacci branching and self-organizing equations.

Continued on page 64

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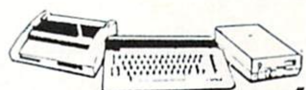
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Continued from page 62

Why Now?

The question begs to be asked. If Verhulst worked on his equations over one hundred years ago, why is it that scientists are just recently working on dynamic equations and fractals? The answer is that before high speed digital computers the results of the equations were obscured. No one could plot millions of complex equations to discover the underlying pattern to chaos. Although the roots of the mathematics are well established, it is only recently that scientists have been able to correlate this information, thanks to computers.

Experiment with both programs to gain further insight into their workings. Some suggestions: use Chaos 1 and plot a few low growth rate factors. Use Chaos 2 and magnify different sections of the matrix and see what you can find.

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

64 Plotting Routine

```
10 REM C64 PLOT ROUTINE'BOKB
20 FOR L=49152 TO 49313'DLSC
30 READ Y:POKE L,Y:NEXT'DGLC
40 DATA 169,003,013,002,221,141,002,
   221,169,252'BORH
50 DATA 045,000,221,009,001,141,000,
   221,169,024'BOGI
60 DATA 141,024,208,169,032,013,017,
   208,141,017'BODJ
70 DATA 208,096,234,169,160,133,252,
   162,191,169'BOCL
80 DATA 000,133,251,168,145,251,200,
   208,251,230'BOWL
90 DATA 252,228,252,176,245,096,234,
   162,250,165'BOAN
100 DATA 002,202,157,000,132,157,250,
    132,157,244'BOXC
110 DATA 133,157,238,134,208,241,096,
    234,169,248'BOFE
120 DATA 037,253,133,002,165,255,041,
    007,005,002'BOVE
130 DATA 168,169,000,133,252,169,248,
    037,255,010'BOTG
140 DATA 038,252,010,038,252,010,038,
    252,133,251'BOBG
150 DATA 165,255,074,074,074,024,101,
    254,105,160'BOII
160 DATA 101,252,133,252,096,234,032,
    078,192,120'BOFJ
170 DATA 165,001,041,254,133,001,165,
    253,041,007'BOUJ
180 DATA 170,232,169,000,056,106,202,
    208,252,017'BOEK
190 DATA 251,145,251,165,001,009,001,
    133,001,088'BOWL
200 DATA 096,234'BHFW
```

64 Chaos 1

```
10 REM C64CHAOS1'BJSY
20 PRINT"[CLEAR]":PRINT:PRINT:PRINT
   :INPUT"INPUT GROWTH RATE FACTOR";
   R'FGNJ
30 G=PEEK(53272):B=PEEK(56576)
   :K=PEEK(56578)'GBGI
40 SYS 49152:SYS 49185:POKE 2,1
   :SYS 49209'EVWG
50 X=.10:XX=.1:Y=1'DMKG
60 X=(1+R)*X-(R*X^2)'GLOI
70 POKE 253,Y AND 255:POKE 254,
   Y/256'ERJJ
80 POKE 255,X*100'CISG
90 SYS 49278'BFVG
100 XX=X'BDKV
110 Y=Y+3:IF Y>320 THEN 130'FLXB
120 GOTO 60'BCNW
130 POKE 53265,PEEK(53265)AND 223'DQMD
140 POKE 53272,G:POKE 56576,B
    :POKE 56578,K'DXAF
150 PRINT:PRINT'CBHB
160 PRINT"DO YOU WANT TO DO
    ANOTHER?"'BAHI
170 INPUT"Y OR N";A$'BDBE
180 IF A$="Y" THEN 20'DEFG
190 IF A$="N"THEN END'ECYH
200 GOTO 160'BDGW
210 END'BACW
```

64 Chaos 2

```
10 REM C64CHAOS2'BJTY
20 SYS 49152:SYS 49185'CLIB
30 POKE 2,1:Y=1:SYS 49209'DMXD
40 R=1.99'BFMB
50 X=.25'BEIC
60 FOR I=1 TO 275'DFNE
70 X=(1+R)*X-(R*X^2)'GLOJ
80 NEXT'BAEE
90 FOR I=1 TO 200'DFBH
100 X=(1+R)*X-(R*X^2)'GLOB
110 POKE 253,Y AND 255:POKE 254,
    Y/256'ERJC
120 POKE 255,X*110:SYS 49278'DOSB
130 R=R+.0035'CHUA
140 Y=Y+1'CDMB
150 IF Y>289 THEN END'EETD
160 GOTO 60'BCNB
```

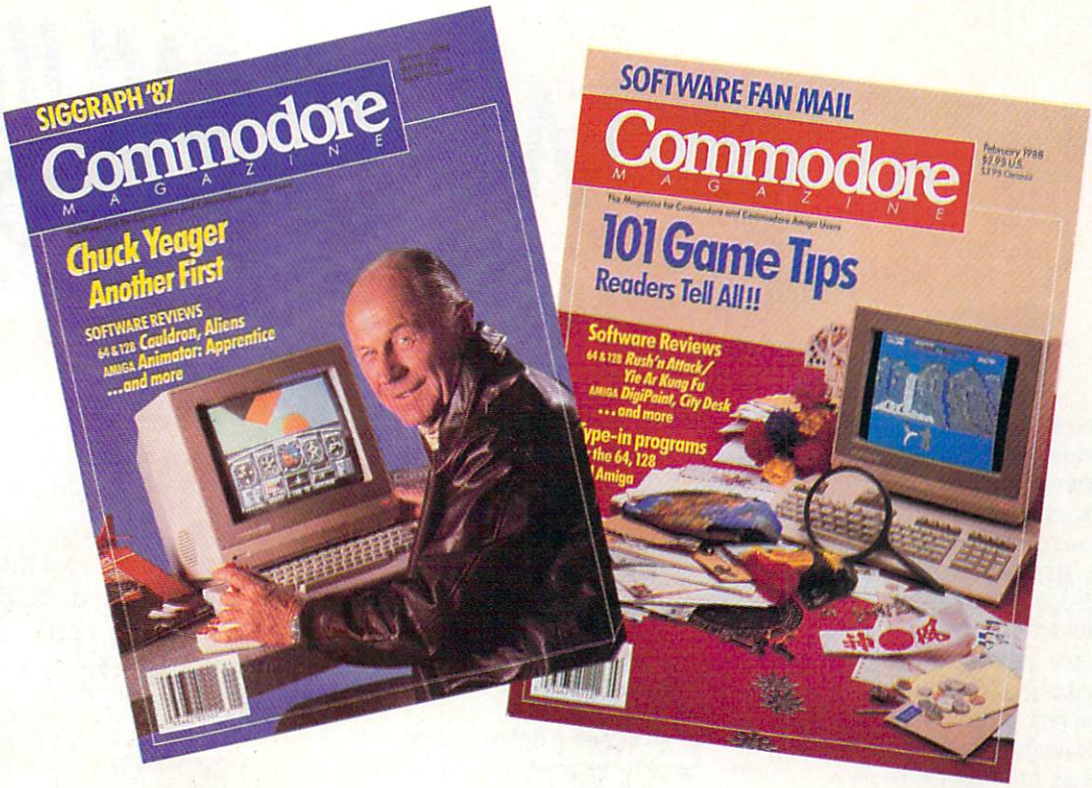
128 Chaos 1

```
10 REM C128 CHAOS#1'BLVA
20 GRAPHIC 1,1:COLOR 0,12:COLOR 1,2
   :COLOR 4,1'EQXE
30 CHAR 1,1,24,"[SPACE4]
   ITERATIVE EQUATION F(X)=X(1+R)-RX
   [UP ARROW]2[SPACE5]",0'BJGM
40 INPUT "INPUT GROWTH RATE FACTOR";
   R'BCUH
50 X=.10:XX=.1'CJWE
60 Y=5'BCND
70 X=(1+R)*X-(R*X^2)'GLOJ
80 PRINT"THE VALUE OF X AT THIS
   ITERATION IS";X'BCNO
90 BOX 1,Y-2.5,X*100-2.5,Y+2.5,
   X*100+2.5'HCFP
100 DRAW 1,Y,X*100 TO Y-5,XX*100'FQGC
110 XX=X'BDKW
120 Y=Y+5:IF Y>320 THEN 140'FLBC
130 GOTO 70'BCOX
```

Continued on page 89

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THE WORTHWHILE IMPOSTERS:

Educational software that sustains a child's interest while teaching fundamental building-block concepts can be hard to find. We look at four programs for the Commodore 64 that do just that.

Publishers of educational software offer a remarkable assortment of distinctly different and often top-notch programs. This article focuses on instructional software that transcends the ordinary by entertaining as it educates. Programs like these are better defined as courseware educational software designed for the classroom or home learning environment.

Commonly, there are two types of courseware. The first is used strictly for reference or fact finding. In other words, it's the sort of program students use for research but rarely for pleasure.

The other variety of courseware teaches by capturing and holding the student's attention. Once that's done they can complete their true mission of enhancing scholastic skills. Restated, these programs are pretenders, they capture a student's interest by masquerading as games.

How does an instructional program sustain a student's interest? For an answer, I thought about my experiences teaching computer literacy to third through fifth graders. Why were some programs unfailingly used more than others? Did these programs share any of the same qualities? Indeed they did. Their shared attribute is the creative blend of colorful graphics, animation and sound into an eye-catching interest-holding combination.

With that template in mind, here are four examples representative of the genre:

THE POND

Publisher:	Sunburst Communications 39 Washington Ave. Pleasantville, NY 10570
Price:	$65.00
Ages:	5-12 years
Emphasis:	Pattern recognition Problem solving Cause and effect relationships

Offering six levels of difficulty *The Pond* is home to a friendly frog who wants to go here to there. The student's objective is to guide the leather-skinned leaper from its starting lily pad to the magic lily pad by pre-programming its hops.

The mechanics of operating the program are simple. The four cursor keys control the frog's movements. Menu choices are selected with the < and > keys.

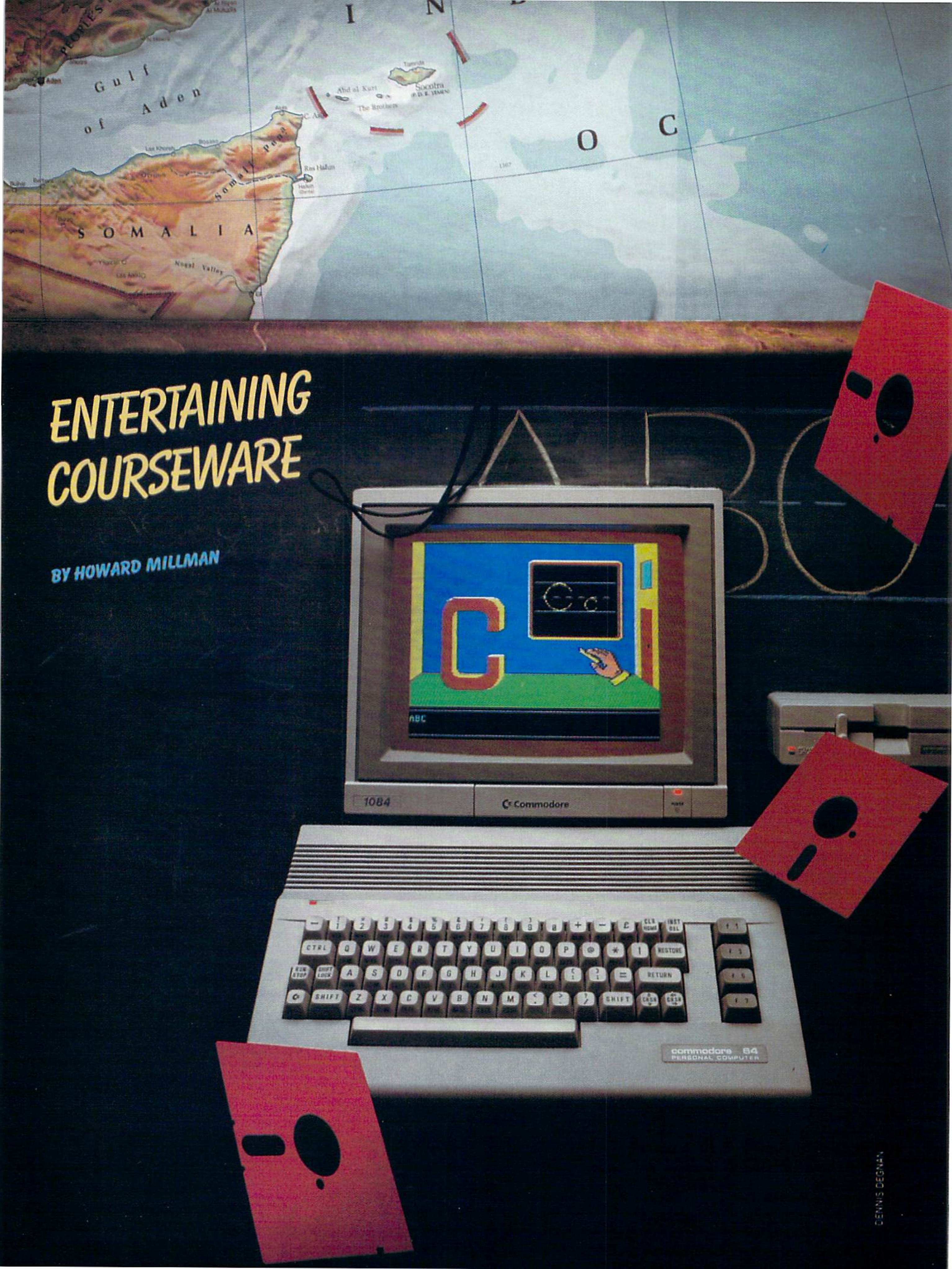
The challenge lies in recognizing a pattern. For instance, a two-part pattern consists of a number of hops down and to the right until the pattern repeats itself. Once the sequence of moves is identified through a system of assumptions, then the student tests the predicted pattern.

In the easier of the game's six levels, the pathway is obvious. In the advanced levels complexity increases with the use of four-part patterns, each containing multiple moves. Additionally, superfluous lily pads serve up visual clutter.

If the sequence is wrong, the speckled sprinter splashes into the spring and swims back to the starting pad, ready to begin the journey again. Next time, hopefully, with a more accurate tour guide.

ENTERTAINING COURSEWARE

BY HOWARD MILLMAN



DENNIS DEGNAN

The Pond subtly strengthens a child's ability to recognize elementary patterns.

Two clues are available for players who become hopelessly mired in the pond. Pressing F1 reveals a bird's-eye view of an entire pond, while F3 momentarily highlights the entire lily pad path.

Using the strategy of directing a frog to playfully hop around the screen, *The Pond* subtly strengthens a child's ability to recognize elementary patterns.

Patterns are found everywhere from the repetitive, like machine operations, to the commonplace such as train schedules, to the complex like human behavior.

Through a trial and error process, *The Pond* deftly encourages an awareness of patterns as well as the concurrent development of problem-solving skills.

TALKING TEACHER

Publisher:	Firebird/Rainbird Distributed by: Activision 2350 Bayshore Pkwy. Mountain View, CA 94043
Price:	$39.95
Ages:	2-6 years
Emphasis:	Elementary language arts Keyboard skills

Children use all their senses throughout the learning process. When something tingles the hand we call it hot. If it chills the skin it's cold. Why? Because everybody says so, that's why. Ditto for learning the alphabet. A letter that looks like an Indian tepee with a brace across it is an "A;" a circle is an "O." Once again, because everyone says so.

Teaching a child the alphabet consists of displaying the letter while making a sound we all agree is its name. With repetition the child eventually associates the shape of the letter with the sound, its name. This reinforcement technique is OK the first 20 or 30 times, but by the hundredth repetition it's tiresome. In other words, ideal grist for a chatty computer.

Talking Teacher is just that. A verbal, colorful, animated method of graphically teaching the alphabet. It offers three levels of difficulty. In level one, a disembodied hand writes the letter on a blackboard in both upper and lower case as a synthesized male voice clearly pronounces the letter. The quality of *Talking Teacher*'s voice is surprisingly crisp and intelligible.

Level two asks the child "Can you find the letter 'A' on the keyboard? Press it when you do." Errors are handled constructively; the program provides helpful feedback when an incorrect choice is made. If, for instance, the student presses an S instead of A, the voice offers such clues as "Try to the left." Letters A through Z are included in the exercise, numbers are excluded. When the correct key is pressed the letter dances in a short animated sequence accompanied by music. Afterwards, the child is again asked to find the letter but this time aided by an on-screen picture of an animal whose name starts with the letter.

The third level deals exclusively with initial letters. It asks, for instance, "What letter does 'hawk' start with?" while displaying a picture of a hawk. The reward for a successful choice is a musical tune and an animated sequence. Two wrong answers and the program supplies the correct response as the hand writes the letter on the blackboard. This exercise is not spelling as much as sound recognition, since only the first letter is requested.

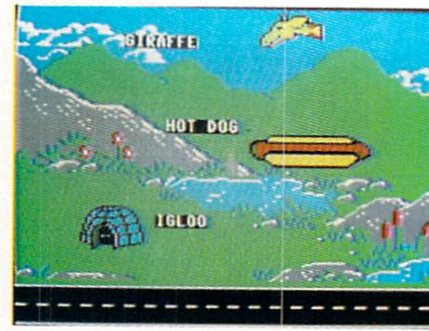
The inclusion of high-quality synthetic speech allows *Talking Teacher* to behave like a student's personal tutor. A tutor with a single-minded goal and unlimited patience. Unquestionably, this is an exceptional program for non-readers.

ERNIE'S BIG SPLASH

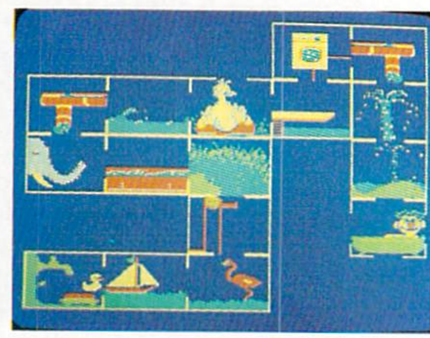
Publisher:	Hi Tech Expressions 1700 N.W. 65th Ave., Suite 9 Plantation, FL 33313
Price:	$9.95
Ages:	4-6 years
Emphasis:	Problem solving through experimentation Exploring sequential events

Ernie, probably grimy from hanging around on Sesame Street, is taking a bath. Sadly, he's missing his rubber duck. For Ernie to regain his equilibrium and continue bathing he must be reunited with his duck. So much for the plot of *Ernie's Big Splash.*

The screen layout represents a series of up to 25 squares forming a simple maze. The duck appears in one on-screen square. In another, Ernie is afloat in his bathtub.



Talking Teacher

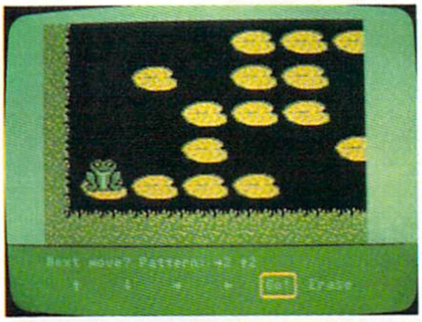

Ernie's Big Splash

The game's objective is to construct a path, one box at a time, so the duck can reach Ernie.

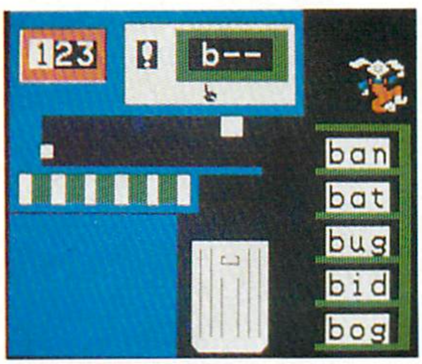
The space bar cycles through the available squares; they always appear next to the box containing the duck. One or more of these boxes has an opening facing the duck and an exit facing toward Ernie. After a square is selected the computer automatically moves to the next space.

Talking Teacher is a verbal colorful, animated method of graphically teaching the alphabet.

When a pathway is completed the function keys send the duck on its way. Inside each box is an amusing graphic depicting zany conveyances ranging from a water spout to an elephant's trunk. As the duck passes through each square, it's propelled by whatever conveyance the square contains. The motion is synchronized with sound effects. When Ernie's duck finally arrives, he signals his joy by revelling in a cloud of soapsuds.



The Pond



Reader Rabbit

Here too, errors are treated lightly. The duck just moves back to the last correct square to wait for new sailing orders.

In the simplest of the three levels, the duck and Ernie appear on screen separated by one open square. In the more difficult levels, additional squares separate the two, and other muppets appear on the screen. These other characters must be included in the path or bypassed. I would like to have seen the degree of challenge increased between the levels. Unfortunately, once the student understands the process, even the more difficult levels are too easily mastered.

Moving from one level to another is convenient; rebooting the computer isn't necessary. The game is played with only the function keys and the space bar. An overlay for the function keys serves as a reminder of their dedicated use.

Like *The Pond*, *Ernie's Big Splash* is a problem-solving game. It encourages experimentation. Unlike *The Pond*, however, pattern recognition isn't required, so it's suitable for younger children. Through its use of humorous animated graphics, minimal commands and readily forgiven errors, *Ernie's Big Splash* attenuates the frustration factors.

Despite the many strengths of these three programs, few things are ever perfect. These programs all share the same shortcoming—the omission of a printer driver. Kids usually like to have something tangible to show for their efforts. In this case, a printout to hang on the refrigerator door or bulletin board would have been nice.

With *The Pond*, students could retrace the path in pencil for additional reinforcement. With *Talking Teacher*, the letters could serve as flash cards. And *Ernie's Big Splash* would make an excellent comic strip to crayon in.

I didn't test any add-on screen dump-to-printer routines, but they are available commercially and through computer clubs.

READER RABBIT

Publisher:	The Learning Company 6493 Kaiser Dr. Fremont, CA 94555
Price:	$39.95
Ages:	4-7 years
Emphasis:	Memorization and recall Primary spelling skills Sequential logic Object/word association

The Learning Company has packed four fast-moving and diverse games onto this disk. Since the later exercises build on the earlier ones, let's take them in order of appearance.

These programs capture a student's interest by masquerading as games.

Sorter: Say, for example, the target pattern is ___ I ___ (blank "I" blank). The first word ejected is "FIN;" it matches because the "I" occupies the center position. Pressing the space bar saves the word by moving it onto adjacent shelves. If, however, the word is "FAN," the student takes no action because it doesn't match. After a moment, the mismatched word is dropped into the waste can and the next word appears.

Each round consists of five words to be saved. When the shelves are filled, *Reader Rabbit* appears and performs a little victory dance atop the shelves.

Their shared attribute is the creative blend of colorful graphics, animation and sound into an eye-catching interest-holding combination.

Sorter's word list consists of about 200 words. The target letter can appear in any of the posted word's three positions. Its location is chosen either at random or by the parent or teacher.

For specific reinforcement, any letter of the alphabet can be selected as the target. As the student becomes comfortable with the concept, the sorter machine's speed may be increased.

Labeler: A primary spelling/memory enhancement exercise employing, once again, three-letter words. Since Labeler deals with spelling of complete however simple words, it's slightly more complex than Sorter.

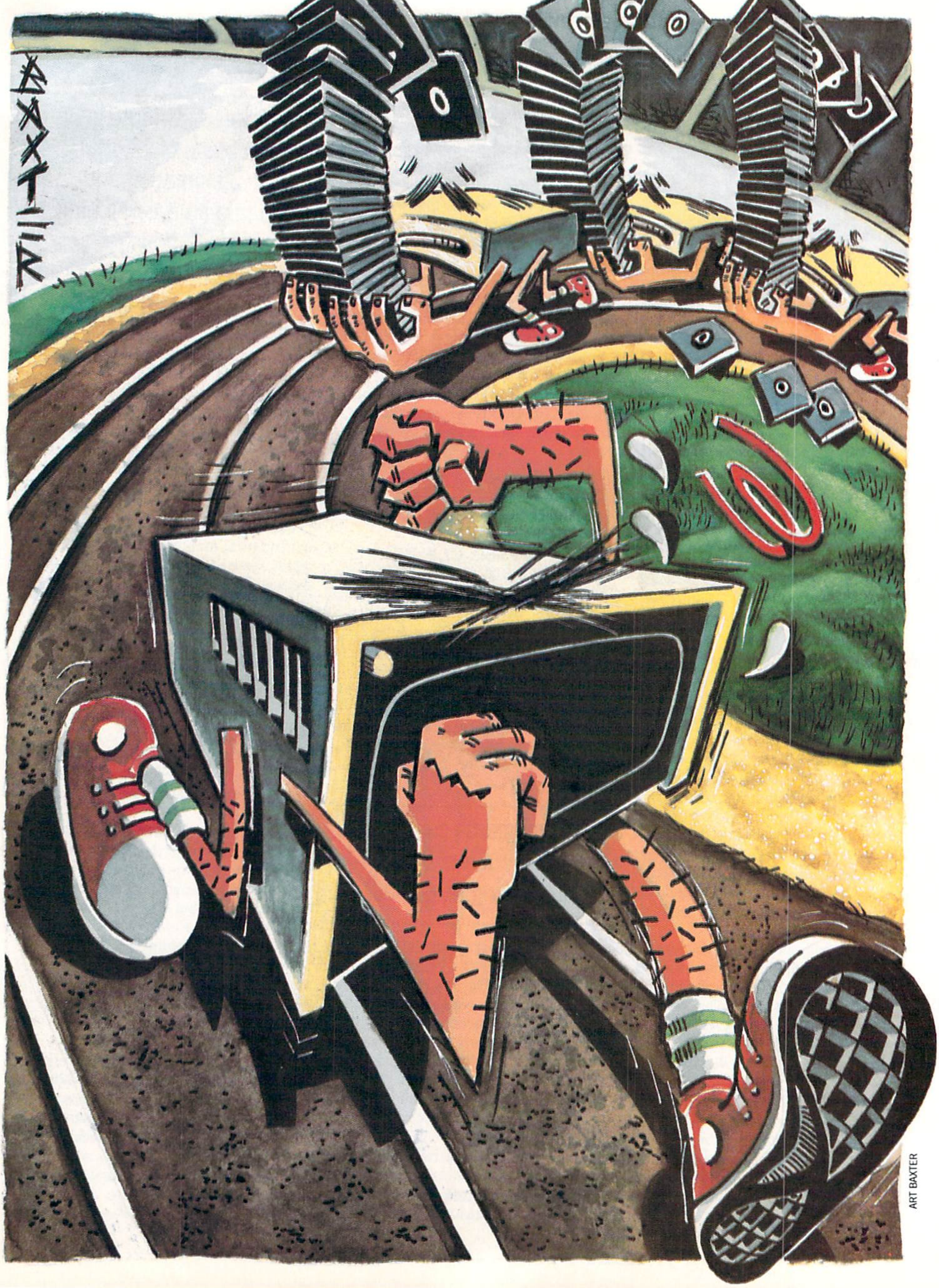
The screen is split vertically into three shipping "cartons;" within each of these three boxes appears a picture. Below each picture are three letters. All the letters under the first box are consonants, the first letter of each picture. The letters under the second box are vowels, the middle letter of each picture. The third box contains consonants, the final letter of each picture.

The student is required to highlight a letter with the cursor then link it with its correct picture. If the choice is correct the letter stays as placed, if not the letter returns to the staging area. At the end of a successful round, *Reader Rabbit* pops up and performs a tumbling act.

A total of 70 pictures are available, drawn from eight diverse groups such as the names of containers, kitchen items, animals, etc.

Labeler is easy to explain and even easier to execute. The first screen of each round presents the three pictures with the labels unscrambled. So students possessing either sufficient visual retention or rudimentary spelling skills can quickly ace this lesson. Perhaps too quickly, since there's no way to bypass this first screen to increase the level of challenge.

Continued on pg. 110



ART BAXTER

THE HARD FACTS

There are several good hard disk drives available for 64 and 128 users. The purpose of this article is not to compare them. Instead it is intended to introduce hard disk drives to those who are thinking of adding one or are simply curious about how they work.

by Gary V. Fields

Do you need more power, size or speed (those three unquenchable cravings of every computer user) for your 64 or 128 system? If so, here are the hard facts about one powerful solution—a hard disk drive.

When I bought my first Commodore 64 in November 1982, it cost $595 for just the CPU and keyboard, and there were no floppy disk drives available at *any* price. Instead, I had to settle for a snail-paced datassette. But I viewed it as a professional storage device and thought I was ready to do some serious computing. I was delighted with the cassette's ability to save and reload programs. At the time it didn't seem important that a 32K program loaded so slowly that I could prepare and eat a balanced meal while waiting.

I didn't object to the cassette's speed until I used my first 1541 disk drive. It could hold 170K of data—enough to pack the 64's BASIC memory four and one half times over, and it was so fast I barely had time to fix an iced soft drink even when loading the largest programs. Suddenly I was computing in high gear. At least that's what I thought until I got my hands on an Epyx turbo Fastload cartridge. Immediately this new speed became indispensable.

The craving for more speed and memory is never quenched, but mine was curbed with the introduction of the fast and fat 1571 and 1581 drives. These drives permanently stopped all my "in-between-load" snacking, but the desire for a faster, bigger disk drive is rarely satiated long. My search for bigger, better and faster storage finally led me to the ultimate fix—a hard disk drive.

When discussing hard drives, it is difficult to talk in generic terms since no two drives perform or handle in exactly the same manner. For that reason when I compare specifications between floppy and hard drives, Xetec's Lt. Kernal 20MB hard drive is used.

The Lt. Kernal is a business-quality drive, which I have found to be fast, flexible and dependable. I cannot say whether or not it is the best drive on the market, since I have not used all the others. I do know that the Lt. Kernal satisfies the criteria I use to judge a hard drive. For that reason I feel comfortable using it as the "generic model" hard drive for either the 64 or 128.

My search for bigger, better and faster storage finally led me to the ultimate fix—a hard disk drive.

Hard vs. Floppy Drives

The obvious difference between a hard and floppy disk drive is the surface used to store data. Most floppy drives read and write to 5.25-inch diskettes made of thin polyurethane or Mylar platters, coated with magnetic material wedged between a protective envelope. This arrangement has one definite advantage—diskettes can be removed and transported easily. But floppy drives have several disadvantages—each diskette will hold only a small portion of the user's library of software, and the user must manually keep track of the location of each disk. Hard drives have the advantage of being able to store huge amounts of data or software programs and can store and recall each almost instantly.

The external appearance of most hard drives is pretty unimpressive. Most look like sealed boxes with an indicator light or two, a power cord and an interface cable which connects to the computer. On the inside the hard drive doesn't differ greatly from a floppy drive. The main difference is the storage material. A 20MB hard drive contains two 5.25-inch aluminum platters which are fixed in place. The top and bottom of these surfaces are coated with iron oxide, and each surface is assigned a separate read/write head. But unlike a floppy disk, each side of a hard disk can hold five megabytes of data. Because the platters are rigid and fixed in place, the drive can spin them up to 12 times faster than a floppy. This rapid rotation causes the read/write heads to float a mere 1.5 microns above the surface of the platter. Because the heads are smaller than those found on floppy drives and the platters are spinning so fast, a hard disk drive can pack data on the 5.25-inch diskette very densely.

How Big is Big?

Anyone who has ever worked with a hard drive knows the advantage one brings to the work place. The comparison of numbers illustrates the advantages hard drives have over their baby brother floppies. Hard drives are usually delivered with memory capacity which begins at ten megabytes and increases in denominations of ten (10MB, 20MB, 30MB, etc.). The most common size at this writing is the 20MB hard drive. Let's compare raw stats between a hard and floppy disk (we won't worry about the few bytes reserved on each disk for housekeeping).

One kilobyte equals 1024 bytes. A 1541 floppy disk can hold 170 kilobytes (174,848 bytes) of information. That is nothing to sneeze at. But when we talk about hard drives, we refer to megabytes of memory. One megabyte equals 1,024,000 bytes. It would take six 1541 diskettes to hold all that. Now multiply that by 20 (the size of a 20MB hard drive) and you begin to appreciate the huge spaces a hard drive opens. A 20MB disk will hold 20,480,000 bytes (the Lt. Kernal's manual states it will hold 21,794,816 bytes, but who's counting?). That means one 20MB hard drive can hold all the information stored on 118 individual 1541 diskettes. That is enough space to hold almost anyone's software library.

To make the comparison between the two disks easier to visualize, let's compare a disk to a dictionary. The *Webster's New World Dictionary* is a hefty book of 1202 pages. If the information there were transferred to disk, you could put not only all the words and definitions (from "a" to "zymurgy") in the dictionary but also all its indexes, including medical terms and the parliamentary law section. As you can see, you'd have to do a lot of filing on a hard drive before you feel cramped for space.

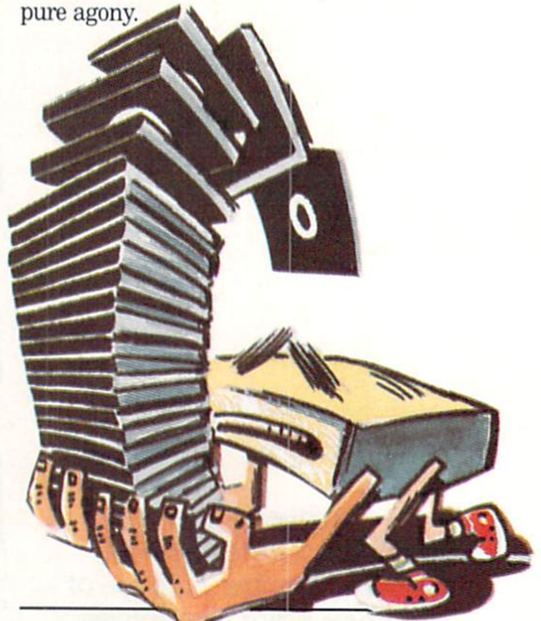
The size advantage of a hard drive over a floppy is obvious. The next two questions to answer are: how do you handle all that size and what about speed? Let's discuss speed first.

How Fast is Fast?

To move bytes quickly between the computer's memory and the hard disk, the platter must spin at speeds which would destroy a floppy. The 1541 is designed to rotate at 300 rpm, but a hard disk can spin 12 times faster (3600 rpm), therefore, it can read or write up to 100 times faster. A file which might take 60 to 90 seconds to load from a floppy disk can be located and recalled almost instantly using a hard disk.

To be useful, the hard drive must be fast, and the faster the better. But perfectly stored programs and data files are next to useless unless you can locate and recall them quickly. A 20MB disk can hold the equivalent of 120 filled 1541 formatted floppy disks. Who would want to sort through a 120-disk library at the speed of a 1541 drive trying to locate one program? But using speed, along with an enhanced DOS (Disk Operating System) the disk makes short work of locating a specific file or program.

The first time you enjoy this rapid exchange, it may appear to be magic, but like all electronic wonders, you'll quickly accept this speed as business as usual. Take that as a warning: If you don't want to become addicted to a hard drive's speed, don't even try it once, returning to anything slower after such an experience is pure agony.



Unlike a floppy disk, each side of a hard disk can hold five megabytes of data.

Managing a Hard Drive

Handling a hard drive should be no more difficult than operating a good DOS utility. But using any hard drive requires that you learn a few new commands and preplan before you begin. Talking to the drive is no more difficult than handling any other drive. Unlike a floppy disk fresh out of the box, the Lt. Kernal's surface comes formatted (all the blocks and sectors are already set up). Rather than treating this huge surface as a single disk, the memory is divided into 11 smaller units called "logical units" or "LUs" (other drives may use different names like: "disk," "directory," "drawer," etc.) Each of these can be subdivided into 16 "user areas." This partitioning may sound alien to you if you have only used a 1541

or 1571 drive. But this structure makes a lot of sense—can you imagine how long it would take you to scan a directory listing all the programs it would take to fill 20MB all located in one common area?

These partitions make it simple to reserve areas for specific types of files or programs. For instance, you would probably reserve one LU for productivity software. Then you could assign one "user area" in that LU for word processing, another for databases, another for tax records and so forth. By locating specific file types in specific locations, you can quickly move from one area on the disk to another with just a few keystrokes and almost no time delay. If you want to duplicate the same file in several different LUs you can do that (using the same or different filenames) or you can simply move the file between directories (LUs) or subdirectories (user areas).

One of the biggest problems to solve is figuring a way to reroute file operations (especially those in commercial software) which are designed to work with device



#8 (your floppy disk drive) to your hard drive instead. Again the Lt. Kernal employs an unusual but very workable solution. Xetec simply assigned the device number of the drive as #8 too (you can change this if you wish).

I can hear you saying, "Wait a minute, that won't work—you can't have two separate devices assigned the number eight connected to the computer at the same time. DOS will be confused." You're right, but the interface connection that allows the drive to operate so fast also reroutes all DOS commands sent to device #8. So in essence the floppy and hard drives electronically merge into one unit. I found this arrangement very sensible. Because of this I am able to load and use even highly protected software via my 1541 or use those on the hard drive without a hitch. I can't report on how other 64 hard disk drives handle the device assignment chore, but this one is painless.

The power of a disk's enhanced DOS commands are limited only by what the drive's developers decided to include. On the Lt. Kernal, these commands include options to scratch files with a simple ERA (erase) command or recover the last erased file, fastcopy files (for quick backups), CP/M operating system, an option to list a directory or list a file or program to the screen without disturbing the BASIC memory. The DIR command causes the directory of the current LU to be displayed on screen. By adding a single qualifier that information can be sorted alphabetically, dumped to the printer, or you can list the directory across LU boundaries, to mention a few. The disk even includes commands which enhance BASIC's editor like: turn a BASIC program into an editable text file, find program strings, merge files, or renumber a program.

If you don't want to become addicted to a hard drive's speed, don't even try it once.

Commercial Programs on a Hard Drive

This is everyone's first concern and also the toughest question to answer. For a hard disk's speed and size to have any value, you must be able to move your valuable files and programs stored on floppy disk to it. The first barrier you must bully through is the software protection scheme barbed around most commercial software. The past year has seen considerable thawing in the cold war between software developers (trying to protect their programs from would-be pirates) and software users (trying to protect their investments).

A few of the leaders in this detente are: Timeworks, who released their *Word Writer 3* totally protection free; Batteries Included (Electronic Arts) who countered with unprotected versions of *PaperClip III*, and Spinnaker who preceded them both with a full line of non-copy-protected productivity software (spreadsheets, word processors and databases) for both the 64 and 128. There are others willing to take the risk (and profits) of releasing unprotected software, and more are sure to follow. Unprotected software can be installed on a hard disk effortlessly.

The first barrier you must bully through is the software protection scheme barbed around most commercial software.

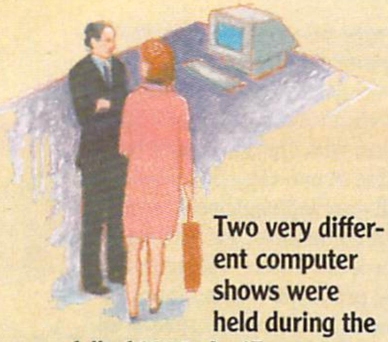
Other companies offer software with what is called "soft" protection. You can copy these programs to a hard drive but must install a security key in a joystick port, insert a key disk in the floppy drive briefly (for verification) or input a code from the manual before you can activate the program. While these protection schemes are not as welcomed by the hard drive user as those with no restrictions, they do allow the owner to install them on a hard drive. As more hard drives are sold, more protection schemes will disappear. No software developer wants to exclude a potential buyer from considering their software.

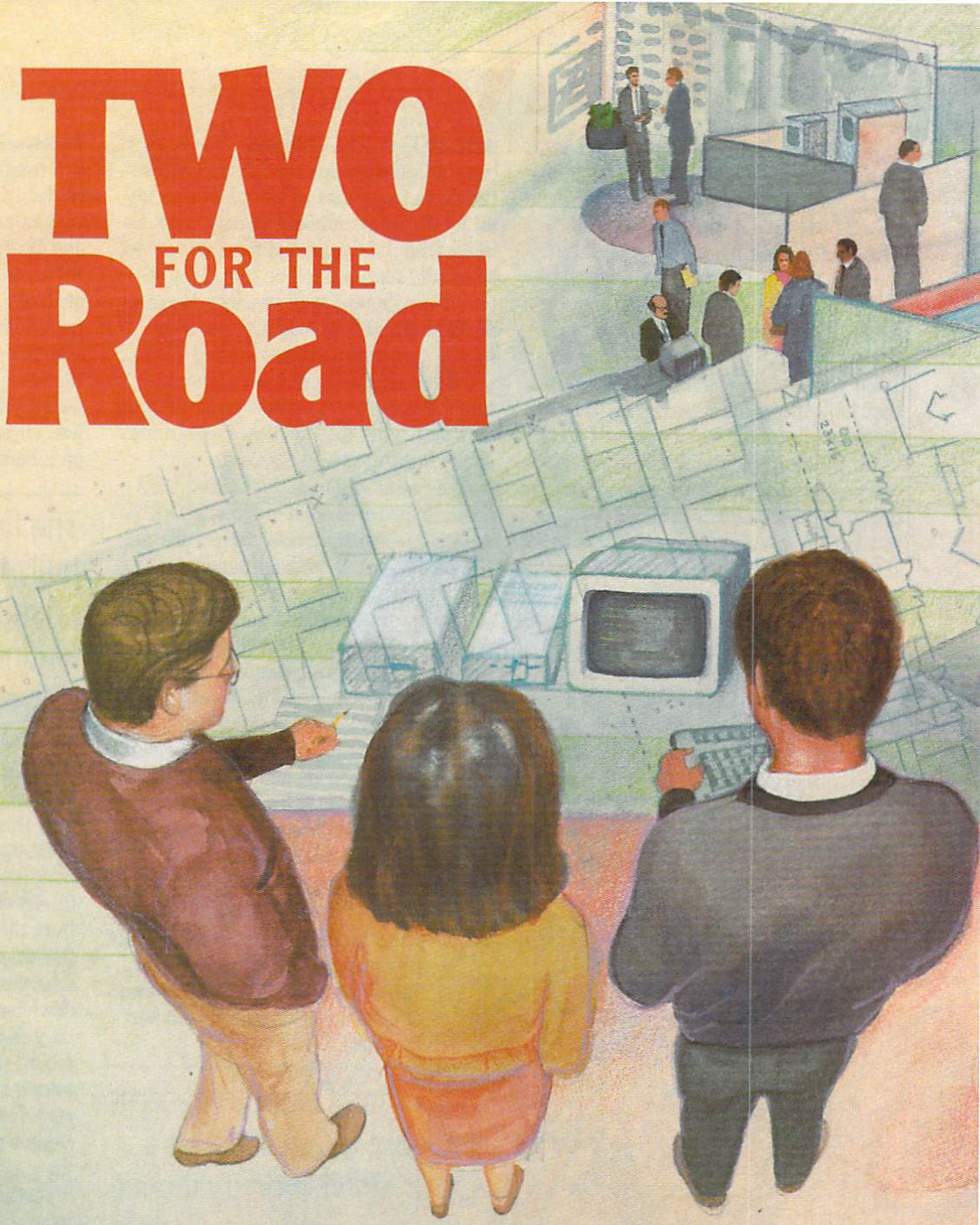
At this writing almost no entertainment software can be easily installed on a hard drive. This dilemma has not gone unaddressed by hard drive developers. To minimize the conflict, Xetec (and I assume other hard drive developers) ships their drives with a program which is designed to capture a program while it is running and then save it to the hard disk where it can be loaded and run from then on. The program works like some of the commercially-sold archival utilities on the market, except programs stored on the hard drive cannot be transferred to a floppy. This scheme seems to satisfy the software developers' security concerns while enabling the user to save most software to the hard drive.

Yes, you can install most of your software library (both commercial and public domain) onto the hard drive—one way or another.

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TWO FOR THE Road





Two very different computer shows were held during the fall of 1987. AmiExpo was an Amiga specific show held in New York in October of 1987. Comdex covers all business computer systems and was held in November of 1987 in Las Vegas.

AmiExpo is sponsored by an Amiga user group and is open to the general public, while Comdex is one of the premier computer dealer shows in the country and is only open to dealers.

While these two shows were very different in purpose and attendance, both served as showcases for new hardware and software for Commodore computers. Here is a look at what new products were shown at each show, as well as a short discussion of the speakers and seminars that were a part of AmiExpo.

Comdex

by Tim Jones

COMDEX—just the name conjures up mental images of a computer heaven. Stretched out over five Las Vegas hotels, the Las Vegas Convention Center and a newly added West Hall, COMDEX Fall '87 was the largest show of its kind. COMDEX is an acronym for COMputer Dealer EXpo, a show from which manufacturers and publishers can introduce new products to distributors and dealers. Although Las Vegas was hit with one of its worst wet spells ever during the first week of November, attendance was spectacular. The final figures for the five-day event were 90,200 registered attendees and 1500 exhibitors.

If this show is any indication of where the computer industry is heading, we can expect to see faster, more powerful, machines that will sit on top of your desk in the very near future. The age of the "computer room" may soon be ending, as you can now get machines that offer the processing capacity and speed of the mini's of the early eighties yet take up no more room than a portable refrigerator. Even though the "computer room" atmosphere may be retained for control of processor use, the physical space that was required is no longer necessary.

This year, Commodore's booth was dominated by the Amiga; there were vendors from all areas of product development displaying their products. Commodore was also showing off their latest entries into the MS-DOS market, the newly revamped multi-speed PC-10 III and the 80386-based PC 60/40. I will discuss these in detail in a moment.

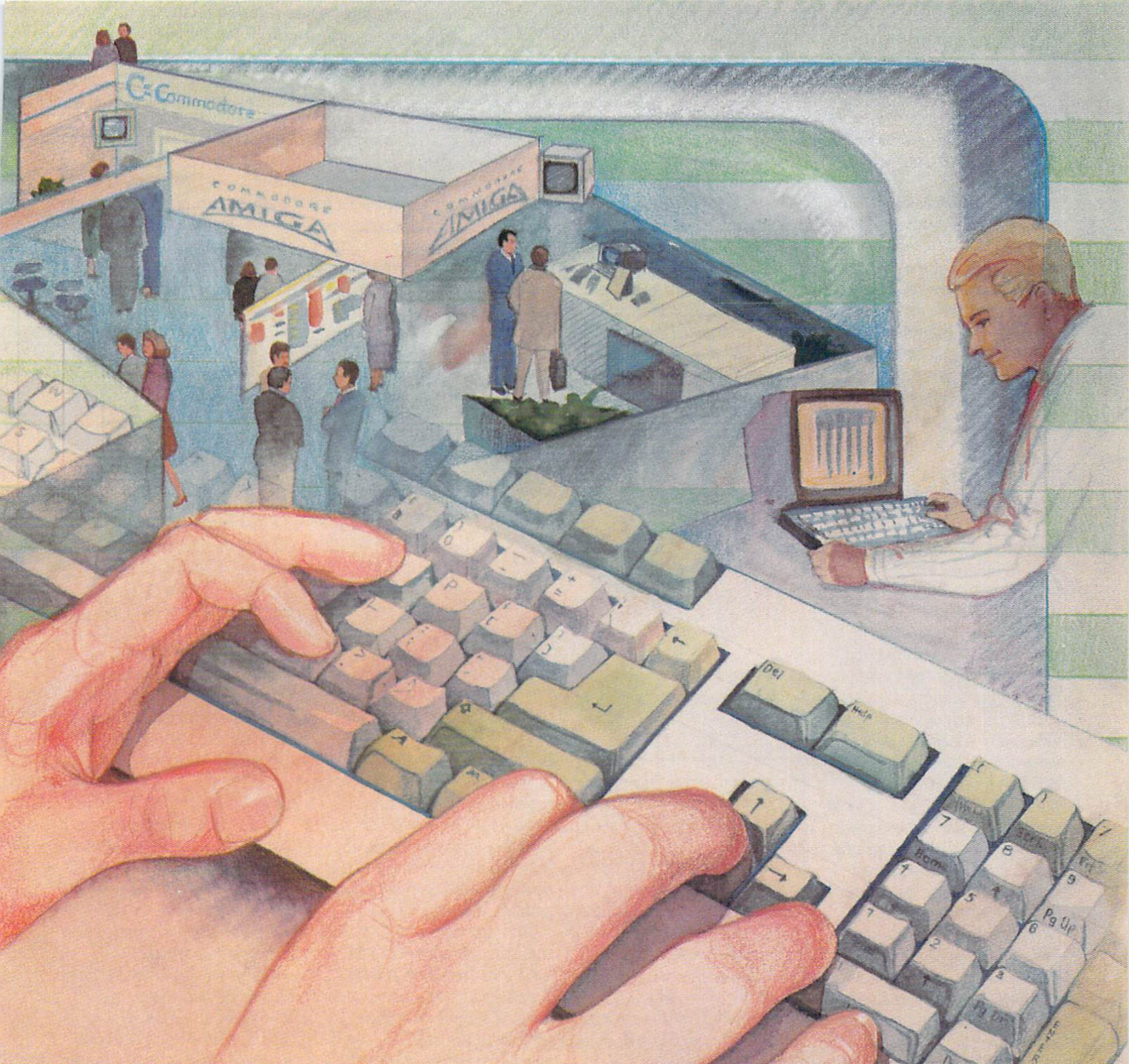
Let's take a look at who and what were seen at the Commodore booth, and then we'll look at the various vendors who had their own booths.

Maestro . . .

In the realm of music, two companies, Mimetics and Opcode, were on hand. The Mimetics demo involved a live MIDI presentation in which their newest version of *Soundscape* was shown off as a major entry into the MIDI marketplace.

Opcode was showing *Music Mouse*, which is described as an "intelligent music processor," rather than a music edi-

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AmiEXPO

by Graham Kinsey

In the past year Commodore's Amiga has become more prominent on the trade show circuit. Amigas were seen at CES and COMDEX shows, plus SIGGRAPH, Seybold, The Commodore Show, World of Commodore, and others. But Amiga owners finally have a show of their own. AmiEXPO is the brainchild of AMUSE Inc., the New York Amiga User's Group. With the help of G & T Management (a trade show management company), AMUSE created AmiEXPO. The first AmiEXPO was held on October 10-12, 1987, at the Sheraton Centre in New York City. Subsequent AmiEXPOs are scheduled for January 15-18 in Los Angeles and July 22-24 in Chicago.

There were three main points of interest at AmiEXPO: The keynote addresses, the exhibit floor with over 70 exhibitors, and the 35 seminars.

MIA BOSNA

The Keynotes

The first AmiEXPO got off to an impressive start. The opening keynote speaker was Jay Miner, chief designer of the custom chips (Agnes, Denise and Paula) and recognized father of the Amiga computer. Miner, who has been in semi-retirement for many months now, started his address with the history of the Amiga from the hardware point of view,

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Comdex

tor. *Music Mouse* is a completely mouse-driven performance tool that allows the user to create rather than compose while allowing full control of MIDI devices via simple keyboard controls. Also, *Music Mouse* has been designed to supply a patch panel hook for use with the Mimetics system, allowing you to record and edit your *Music Mouse* performance. For more information on *Music Mouse*, see the September 1987 issue of *Commodore Magazine*.

Take a Letter . . .

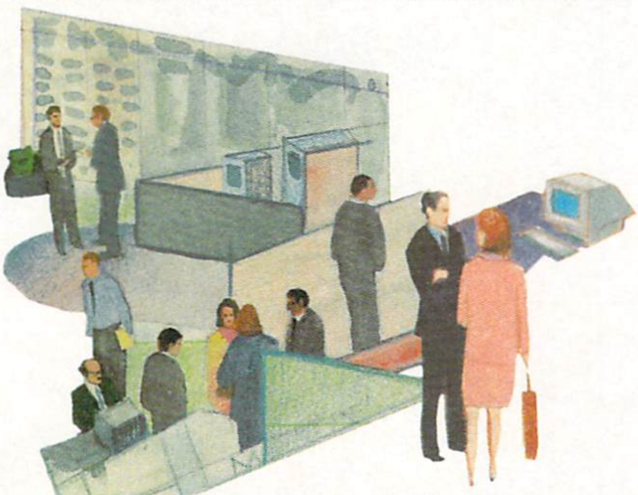
The world of business software was also represented, with companies like B.E.S.T., Oxxi, Progressive Peripherals and Software, Taurus and WordPerfect demonstrating their various accounting, database, spreadsheet and word processing packages.

B.E.S.T. was represented by Chase and Associates who were demonstrating the B.E.S.T. line of accounting management packages, a set of very easy to use, yet complete, business accounting programs. The B.E.S.T. packages are available for both the Amiga family and, under GEM, the MS-DOS world. The B.E.S.T. system is designed to manage the accounting needs of any business, from the small retail store to a complete corporate environment.

Oxxi was demonstrating the latest revisions of *MaxiPlan* and *MaxiPlan Plus*, their spreadsheet programs for the Amiga. They have added the ability to resize the cell width with the mouse directly and background dithering in the graphics functions to allow for adding 3D effects to your charts. Plus, video refresh and calculation times have been reduced dramatically.

In addition to their spreadsheet software, they were showing off *Nimbus 1*, an all-in-one small business accounting package. *Nimbus 1* can be used simply to maintain your personal checkbook or to handle the accounts for a small business.

Progressive Peripherals and Software demonstrated the newest member of the *SuperBase* family, *SuperBase Professional*. While the original version of *SuperBase* for the Amiga was labelled as a "Personal" version, the new Professional version will move the user into the world of database applications creation previously reserved for users of Ashton-Tate's *dBase* line or the more powerful systems from companies like MicroRIM or SASI. PP&S has taken *SuperBase* to the next level of performance and created a system that may be used by analysts and developers to create stand-alone applications, thus adding to the usefulness of the Amiga family. They were also showing off the Amiga version of *VizaWrite*, a word processing package popular with Commodore 64 and 128 owners. *VizaWrite* for the Amiga has been renamed *Desktop VizaWrite*, due to the addition of multiple font and graphics capabilities.



If you're into graphic arts, a name to watch for in the near future is MicroIllusions.

Taurus Software was demonstrating two packages, however, only *Acquisition II* falls into the business catagory. *Acquisition II* is a very elaborate, yet easy to use, relational database package. You can use the system as it comes, or create a totally new environment with their full-featured programming language. According to Taurus representatives, *Acquisition II* is limited only by the amount of storage space that you have available and your imagination. The system allows the basic user to create a complete database very quickly, while allowing an analyst or programmer to have full control over all aspects of the application from what style of text and displays to use to the creation and manipulation of gadgets and requesters.

An important new entry into the Amiga market at COMDEX was *WordPerfect* from WordPerfect Corp. After many years of success with their product in the MS-DOS world, they have developed *WordPerfect* for the Amiga where it is proving to be just as successful. WordPerfect Corp. announced that over 10,000 units had been sold since they began shipping on July 10. Unlike so many other word processing programs on the Amiga, however, WordPerfect didn't get involved with the graphics aspects of the machine. Instead, they offer a full-featured word processing package. The system includes a very thorough and easy to follow tutorial and a complete spelling checker and thesaurus.

Designing Computers

Taurus Software was also showing *X-CAD*, their exceptionally powerful Computer Aided Design package. In combination with X-CAD, MicroWay was previewing the FlickerFixer, a high-resolution monitor adaptor for the Amiga 2000. Flickerfixer allows Amiga users to take advantage of the VGA-compatible multiscan monitors that are becoming popular in the MS-DOS world. With the FlickerFixer in operation, *X-CAD*'s displays were so clear that they looked more like posters or high quality prints, rather than video display images. The quality of *X-CAD* when used with FlickerFixer was the best video display that I have ever seen on an Amiga. *X-CAD* will open new doors in the world of CAD on the Amiga. With the power of *X-CAD* and the clarity of display offered by the FlickerFixer, all of the excuses that high-performance CAD users have been using to avoid the Amiga will be voided.

Home Movies and More!

Since video performance remains one of the top-rated features of the Amiga line, it's not surprising that the majority of the products shown at the booth were related to video production of some type.

Electronic Arts was showing off *DeluxeProductions*, which was originally introduced at SIGGRAPH '87 by Keith Masavage of Associated Computer Services. Electronic Arts picked up the product since it fit in so well with their current line of Deluxe products. This package is a complete video production and business presentation tool. It uses a 16-color, high-resolution display and allows for a wide variety of editing techniques and special effects. Some of the more impressive features of *DeluxeProductions* are double buffered animation, 704 x 444 pixel display and over 40 screen transitions like wipes, scatters, fades and spirals.

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mentioning members of the original chip design team like Ron Nickelson (the first person to suggest a four-channel blitter), Dave Dean (who wrote the logic for the Denise chip), Akio Tanaka (who finished Dean's work, and later designed the A1300 Genlock device), and Dave Needle (who designed the printed circuit boards of the first Amiga). Jay also gave special praise to one of the members of the software team, Dale Luck (known as *the* graphics wizard of the Los Gatos team). He then went on to make some personal predictions regarding the future of the Amiga and its technology.

Miner also made a brief pitch for support of public television stations, the only current TV source that "tells it like it is." Miner explained how stations like WGBH (Boston) and WNYU (New York) use the Amiga. WGBH has used the Amiga for puzzle-type education games, while WNYU used the Amiga to simulate the deforestation of rainforests via IFF picture slideshows with color cycling.

Near the end of his speech he noted that he regretted not having added a scan rate for 400 lines non-interlaced in the original chip set, but he was very pleased that he did not decide to remove Hold and Modify from the old chips. During the design of the chips, Miner said he didn't see how a Hold and Modify graphics mode could be useful.

Miner was warmly received by the many Amiga enthusiasts present and finished to a standing ovation.

Sunday's keynote speaker was R.J. Mical, designer of Intuition, the Amiga's user interface. Mical took a minute to comment on how far the Amiga software and peripheral base has progressed in terms of quality. He then proceeded to tell his now-famous tale of the history of the Amiga, from the inception of Amiga Inc. to Commodore's acquisition of the Amiga technology to today.

I won't attempt to retell Mical's tale, for I could not possibly hope to tell it as well as he can. All I will say is if you have never heard R.J. give his speech, then make every effort to do so! Those who are new to the Amiga should know the fairy tale story behind this unique computer.

On Monday, the final day of the New York AmiEXPO, the keynote speaker was Richard McIntyre, Senior Vice President of Sales and Marketing at Commodore, who talked about the marketing aspects of the Amiga series.

McIntyre stressed the desktop publishing solutions that the Amiga offers.

McIntyre refers to the Amiga 500 as "the ultimate home computer." He emphasized that although the vast majority of the computer industry is ignoring the home market, it continues to grow, and Commodore continues to hold the lion's share.

The Amiga 500 has a big advantage in that it is the first computer that can be interfaced with VCRs and related video devices. McIntyre pointed out that 50% of Americans now own VCRs. He also said that the graphics quality of the Amiga is untouchable. Any non-believers of this should be convinced by the fact that Commodore's OEM division shipped over 5000 Amiga 500 motherboards one month to the coin-op companies (Bally, Mastertronics and Grand Products) for use in their coin-op arcade machines.

McIntyre also noted that since the Amiga family of computers has maintained software compatibility, the Amiga 500 allows home users to use professional software packages and to enter high-end computer applications never before possible with computers that cost less than a thousand dollars.

McIntyre then showed the Amiga 500 Test Flight videotape, a 15-minute video produced by Commodore to allow prospective Amiga 500 buyers to see what the machine and its software can do. McIntyre mentioned that the inclusion of dozens of third party products in the tape proves that Commodore supports third party developers. He explained, "Without third party support, Commodore is going nowhere."

The last part of McIntyre's presentation stressed the importance of selling the Amiga 2000 to businesses as systems, not just computer hardware. He stated that Commodore can now make presentations to corporations with confidence since the Amiga now covers the big five software categories (Accounting, Spreadsheets, Databases, Word Processing and Desktop Publishing) that are the heart and soul of business computing solutions.

McIntyre stressed the desktop publishing solutions that the Amiga offers and went on to say that the Amiga stands alone in the area of desktop presentation. The Amiga's ability to give high-quality presentations is no longer questioned. As an example of a large company that makes use of the Amiga 2000 for desktop presentation, McIntyre mentioned the fact that Kraft had recently presented their five-year plan with the Amiga 2000.

McIntyre closed by mentioning that the Amiga now offers sufficient power for Commodore to go after the secondary schools and colleges. The Test Flight videotape mentions that the Amiga is now used at such colleges as UCLA and Ohio State.

Overall, McIntyre's keynote speech shows that Commodore has clear cut marketing goals for the Amiga.

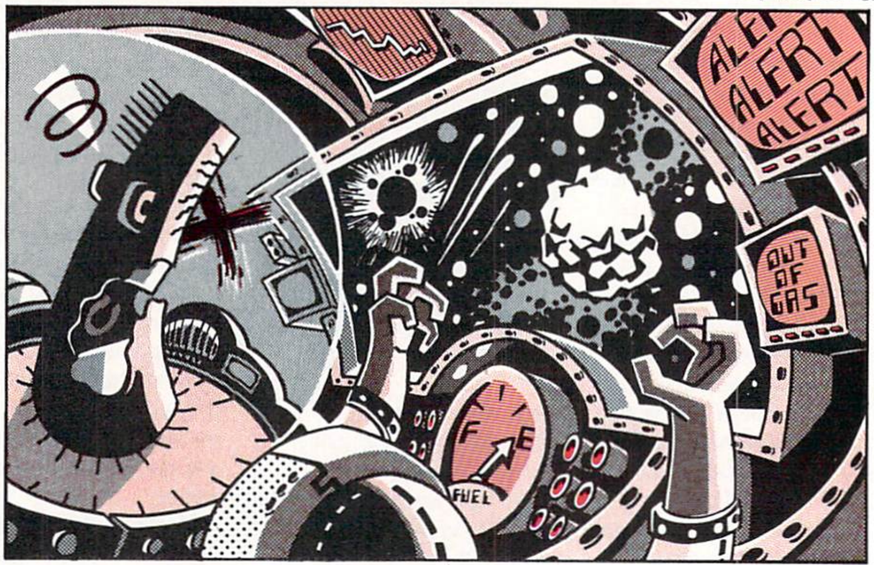
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by Mary Jo Eggena

Mathers of the Universe

for the Commodore 64



ART BAXTER

As a trainee in the space flight program, your mission is to land on a nearby asteroid. To accomplish this feat you must accurately calculate the total pounds of fuel required to fire the rockets of your space capsule. If your mathematical computations are correct, the rockets will fire and move you closer to the asteroid. Make a mistake and the rockets will fail, some fuel will be lost, and the capsule will drop lower than its last climb. If you use all your fuel before reaching the asteroid, the capsule will plummet downward and crash on the launching platform. Making a miscalculation when the ship is near or on the platform will also be disastrous. Every entered answer consumes fuel which allows a maximum number of 44 turns. The game ends when a landing or crash occurs, whereupon the screen displays one of four faces for players too young to read or a message for those at higher levels of play.

Mathers of the Universe has seven progressive levels of difficulty in addition, subtraction, multiplication and division. The first selection screen displays two numbers to the right of each level. These numbers are measurements of the most difficult problem that particular level will produce. For example, the 9*5 to the right of the Beginner II level indicates that the most difficult problem will be nine plus five, nine minus five or nine times five. In division you multiply the two numbers to get the dividend, and the second number becomes the divisor. Thus the most difficult problem of division in Beginner II would be 45 divided by five.

In addition to the seven levels of difficulty, there is an option which allows the player to change the second number to any number from zero to 999. This is an important feature, because early math is often taught by first mastering addition with a single number (such as two plus one, two plus two, two plus three, etc.). The selected number appears in each problem, while the first number remains a random value based on the chosen level of difficulty. If you wish to have a particular number appear in every problem, then before you choose a player level press the number eight, and you will be taken to a new screen where you can select the desired number. After entering your number you will be returned to the first screen where you can opt for level of difficulty or change the number you selected if you are dissatisfied with your choice.

After selecting a player level, you are asked to choose the type of mathematical calculations you would like to perform. Because math is frequently drilled with a combination of addition and subtraction problems or multiplication and division problems, the six categories include these two choices.

When you have chosen the desired type of problems, there will be a short wait while the game screen is set up. The window on the upper-left screen will display the problems. Players will use the numbers at the top of the keyboard and the RETURN key to enter their answers. Prior to entering a response, the player can use the DELETE key to erase his/her mistakes. After the RETURN key is pressed, the player is told whether the number is correct or incorrect. If it is incorrect, the correct answer will also be displayed. This is an important teaching aid, and players should be encouraged to watch for these displays.

A fanfare or dirge will sound at the end of the game. This can be helpful in alerting a parent or overseer if he/she wishes to view the total correct and incorrect responses which are displayed at the end of the game. At this point the player can end the game or return to the selection screens, choose the desired options and begin a new game.

Written entirely in BASIC, the program utilizes sprite, sound and music commands. A simple screen color poke was utilized during fast set-up to prevent the younger user from becoming concerned that the program was not progressing. While a screen-blanking command could have been added at the beginning of the program, the title screen was deliberately left to display the random poking of the stars for the visual enjoyment of the youngster.

The subroutine beginning on line 970 is an important feature to game play. It rejects any character other than a number, allows the user to erase mistakes, prevents keybounce input, limits the length of the response, rejects a RETURN without an answer and waits for a RETURN before setting the answer.

Line 1690 begins a subroutine which creates a mock window. The routine mentioned above prevents the player from walking out of the window and answers are printed on lines which are void of stars to keep graphics from entering the window during erasures.

Typing the Program

Find a disk on which to save the game. If it is a new diskette, it will need to be formatted before saving the game. Type in the program as listed, insert the disk into the drive, then in direct mode (typing without a line number) type SAVE-"MATHERS",8 and press RETURN. Type SAVE"MATHERS",1 if you are using a tape cassette. When the game has been saved, type RUN, press RETURN and play the game. To play the game later merely insert the disk, type LOAD "MATHERS",8 and press RETURN. Cassette users type LOAD"MATHERS",1. When the game has finished loading, type RUN and press RETURN.

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

Mathers of the Universe

```
10 REM *** MATHERS OF THE UNIVERSE -
   BY MARY JO EGGENA ***'BQXI
20 GOSUB 30:PRINT"[CLEAR]":POKE V,6
   :POKE VB,6:GOTO 50'FPKE
30 O$=" ":T$="[SPACE3]":L$="[SPACE5]"
   :P$=L$+"[SPACE2]"'FNPG
35 J$=P$+"[SPACE2]":Q$=J$+"[SPACE2]"
   :S$=Q$+"[SPACE4]"'GOGM
40 V=53280:VB=V+1:K=1024:S=54272
   :C$="CORRECT"'GCHM
45 I$="INCORRECT":D$="[DOWN4]"
   :RETURN'DGXL
50 J=J+1:X=INT(RND(1)*999)+K:P=X+S
   :POKE X,46:POKE P,1:IF J<100 THEN
   50'OJHS
60 POKE 1149,81:POKE 1577,81
   :POKE 1692,81:POKE 55421,8
   :POKE 55849,5:POKE 55964,2'GWGP
70 PRINT D$"[DOWN,GRAY2,RVS] [GRAY3,
   SPACE2,CMDR *,SHFT POUND,SPACE2,
   RVOFF,GRAY2,CMDR *,GRAY3,RVS,
   SPACE4,RVOFF,GRAY2,CMDR *,GRAY3,
   RVS,SPACE5,RVOFF,GRAY2,CMDR *,RVS,
   GRAY3] ";'BDSR
75 PRINT D$"[RVOFF,GRAY2,CMDR *,RVS]
   [GRAY3] [RVOFF,GRAY2,CMDR *,GRAY3,
   RVS,SPACE4,RVOFF,GRAY2,CMDR *
   GRAY3,RVS,SPACE4,RVOFF,GRAY2,
   CMDR *]";'BDGU
80 PRINT"[GRAY3,RVS,SPACE4,RVOFF,
   GRAY2,CMDR *]"'BAKH
90 PRINT"[RVS] [GRAY3] [RVOFF,CMDR *,
   RVS,SPACE2,RVOFF,SHFT POUND,RVS]
   [RVOFF] [RVS] [RVOFF,SPACE2,RVS]
   [RVOFF,SPACE3,RVS] [RVOFF,SPACE3]";
   'BBWN
95 PRINT"[RVS] [RVOFF,SPACE2,RVS]
   [RVOFF] [RVS] [RVOFF,SPACE4,RVS]
   [RVOFF,SPACE2,RVS] [RVOFF] [RVS]
   [RVOFF,SPACE3,GRAY2,CMDR M]"'BAYS
100 PRINT"[RVS] [GRAY3] [RVOFF]
    [CMDR *,SHFT POUND] [RVS] [RVOFF]
     [RVS,SPACE4,RVOFF,SPACE2,RVS,
    GRAY2] [GRAY3] [RVOFF,SPACE2,RVS,
    GRAY2] [GRAY3,SPACE4,RVOFF] [RVS,
    SPACE3,RVOFF,SPACE2,RVS,SPACE3,
    RVOFF,SHFT POUND] [RVS,SPACE4,
    GRAY2,RVOFF,CMDR M]"'BAFL
110 PRINT"[RVS] [GRAY3] [RVOFF,SPACE3,
    RVS,GRAY2,SHFT POUND,GRAY3]
    [RVOFF] [RVS] [RVOFF,SPACE2,RVS]
    [RVOFF,SPACE2,RVS,GRAY2] [GRAY3]
    [RVOFF,SPACE2]";'BBUF
115 PRINT"[RVS,GRAY2] [GRAY3] [RVOFF,
    SPACE2,RVS] [RVOFF] [RVS] [RVOFF,
    SPACE4,RVS] [RVOFF] [CMDR *,RVS,
    CMDR *,RVOFF,SPACE4,RVS] [GRAY2,
    RVOFF,CMDR M]"'BALL
120 PRINT"[RVS] [GRAY3] [RVOFF,SPACE2,
    RVS,GRAY2,CMDR *] [GRAY3] [RVOFF]
    [RVS] [RVOFF,SPACE2,RVS] [RVOFF,
    SPACE2,RVS,GRAY2] [GRAY3] [RVOFF,
    SPACE2,RVS,GRAY2] ";'BBVH
125 PRINT"[GRAY3] [RVOFF,SPACE2,RVS]
    [RVOFF] [RVS,SPACE4,RVOFF] [RVS]
    [RVOFF,SPACE2,RVS] [RVOFF] [RVS,
    SPACE4,GRAY2,RVOFF,CMDR M]"'BALK
130 PRINT"[CMDR T39,GRAY3]"'BAXY
140 PRINT"[DOWN3,GRAY3]"S$"[LEFT]O F
    [SPACE3]T H E"'BCID
150 PRINT"[DOWN3,SPACE2,RVS] [RVOFF]
    [RVS] [RVOFF,SPACE2,RVS] [CMDR *]
     [RVOFF,SPACE2,RVS] [RVOFF]
    [CMDR *,RVS,CMDR *,SHFT POUND,
    RVOFF,SHFT POUND] [RVS] [SHFT *2,
    RVOFF,SPACE2,RVS] [SHFT *] [RVOFF,
    SPACE2,RVS] [SHFT *2,RVOFF,SPACE2,
    RVS] [SHFT *2,RVOFF]"'BASS
160 PRINT"[SPACE2,RVS,SPACE3,RVOFF,
    SPACE2,RVS] [RVOFF,CMDR *,RVS]
    [RVOFF,SPACE2,RVS] [RVOFF,SPACE2,
    CMDR *,SHFT POUND,SPACE2,RVS]
    [SHFT *2,RVOFF,SPACE2,RVS] [RVOFF]
     [RVS,CMDR C,RVOFF,SPACE2,RVS,
    SHFT *2] [RVOFF,SPACE2,RVS]
    [SHFT *2,RVOFF]"'BAOS
170 X=INT(RND(1)*990)+K:Z=PEEK(X)
    :IF Z<>32 OR X>1263 AND X<1464
    THEN 170'PHRT
180 J=X+S:POKE X,46:POKE J,1
    :FOR P=1 TO 50:NEXT'ISIM
185 POKE J,6:POKE X,32:FOR P=1 TO 100
```

```
   :NEXT'GPTO
190 IF M<30 THEN M=M+1:GOTO 170'GKXK
200 POKE V,0:POKE VB,0:PRINT"[CLEAR,
   RED] T R A I N I N G[SPACE3]
   M I S S I O N[SPACE2]XXVII"'DJBJ
210 PRINT"[DOWN,BLUE]YOU ARE ABOUT TO
   UNDERGO A TRIAL RUN[SPACE2]
   IN"'BAMI
220 PRINT"THE SPACE PILOT TRAINING
   [SPACE2]PROGRAM.[SPACE2]YOUR"'BAUJ
230 PRINT"MISSION IS TO[SPACE2]
   MAKE A SUCCESSFUL LANDING"'BALK
240 PRINT"ON A NEARBY ASTEROID.TO DO
   THIS YOU MUST"'BARL
250 PRINT"ACCURATELY CALCULATE THE
   CORRECT[SPACE2]POUNDS"'BAMM
260 PRINT"OF FUEL NEEDED TO FIRE THE
   MAIN ROCKETS."'BAYN
270 PRINT"IF YOUR CALCULATIONS ARE
   INACCURATE, THE"'BACO
280 PRINT"ROCKETS WILL NOT FIRE,
    FUEL WILL BE LOST"'BARP
290 PRINT"AND GRAVITY WILL PULL ON
   THE SHIP (SPEND"'BAQQ
300 PRINT"ALL[SPACE2]YOUR[SPACE2]
   FUEL AND YOUR SHIP WILL
   CRASH"'BARI
310 PRINT"ON THE LAUNCHING
   PLATFORM)....GOOD LUCK!"'BASJ
320 PRINT J$"[RED]PRESS ANY KEY TO
   BEGIN";'BDKG
330 GET F$:IF F$=""THEN 330'EIPE
340 PRINT"[CLEAR]":GOSUB 30:J=24
   :JJ=226:M=247'FSBI
345 DIM HF(18),HH(18),LF(18),LL(18),
   DR(18)'BJGN
350 FOR I=1 TO 18:READ HF(I),HH(I),
   LF(I),LL(I),DR(I):NEXT'FKXM
355 FOR I=1 TO 4:READ QC(I):NEXT'FKWM
360 FOR I=1 TO 7:READ RD(I),RP(I),
   RR(I),RN(I):NEXT:PL=-1:KF=183'INIQ
370 PRINT"[CLEAR]","[BLUE,SPACE2]
   PICK A LEVEL!",,"[DOWN2,SPACE5,
   BLUE]LEVEL"L$;'BGYM
375 PRINT" MOST DIFFICULT
   PROBLEM"'BAAP
380 PRINT"[DOWN,RED]1) BEGINNER I"Q$"
   [SPACE2]5*5",,"[DOWN]
   2) BEGINNER II"Q$" 9*5"'BGBP
390 PRINT"[DOWN]3) BEGINNER
   III"Q$"9*9",,"[DOWN]
   4) JUNIOR I"S$"40*9"'BGCP
400 PRINT"[DOWN]5) JUNIOR II"S$"[LEFT]
   100*9","[DOWN]6) ADVANCED"S$"100*
   99"'BFKI
410 PRINT"[DOWN]7) SENIOR"S$"[SPACE2]
   1000*999",'BDFE
415 PRINT"[DOWN]8) TO CHANGE AND SET
   THE SECOND NUMBER"'BATO
420 PRINT"[DOWN2,GRAY1,SPACE2]
   THE * INDICATES MATH SYMBOLS(+,-,
   X)"'BAYK
430 PRINT"[DOWN,RED] MULTIPLY NUMBERS
   FOR HIGHEST DIVIDEND";
   :POKE 198,0'CHCO
440 GET B$:A=VAL(B$):IF A<1 OR A>8
   THEN 440'IQDK
450 H=7:IF A=8 THEN 1200'EJNH
460 PRINT"[CLEAR,DOWN3]"D$J$"[BLUE]
   SELECT A CATAGORY![DOWN2]"
   :PRINT,"[RED]1) ADDITION"'CGTP
470 PRINT,"[DOWN]2) SUBTRACTION"
   :PRINT,"[DOWN]3) MULTIPLICATION"'
   CDRP
475 PRINT,"[DOWN]4) DIVISION"'BBSN
480 PRINT,"[DOWN]5) COMBINATION 1 & 2"
   :PRINT,"[DOWN]6) COMBINATION 3 &
   4":POKE 198,0'DJOT
490 GET A$:B=VAL(A$):IF B<1 OR B>6
   THEN 490'IQHP
500 GOSUB 1750:X=(RND(1)*TI)
   :IF A>6 OR PL>99 THEN H=6'KWRK
510 PRINT"[CLEAR]":POKE V,7:G=53265
   :POKE G,PEEK(G)AND 239
   :IF B=5 OR B=6 THEN CO=B-3'NEWP
520 X=INT(RND(1)*986)+1037
   :IF X>1183 AND X<1224 THEN
   520'KCMN
530 IF X>1263 AND X<1304 THEN 520'FNGI
540 P=X+S:Z=Z+1:POKE X,46:POKE P,1
   :IF Z<61 THEN 520'JXIO
550 PRINT:PRINT D$D$D$D$D$"[DOWN,RED]
   E"J$"FUEL"J$"[LEFT]F"
   :IF B=4 THEN RT=1'GVVP
560 PRINT"[RVS,GREEN,SPACE25,RVOFF,
   WHITE] .[SPACE3,GRAY2,CMDR @,
   CMDR P,CMDR O3,CMDR P,CMDR @]";
   'BBTP
570 VC=13*4096:POKE VC+21,49
   :POKE VC+29,112:POKE 2040,192
   :POKE 2041,193'ISKU
580 POKE 2042,194:POKE 2043,195
   :POKE 2044,196:POKE 2045,197
   :POKE 2046,198'FTAS
590 POKE VC+16,95:POKE VC+0,J
   :POKE VC+1,JJ:POKE VC+2,J
   :POKE VC+3,M:POKE VC+4,J'MNLY
600 POKE VC+5,M:POKE VC+6,J
   :POKE VC+7,M:POKE VC+8,12
   :POKE VC+9,50:POKE VC+10,KF'MOVQ
610 POKE VC+11,244:POKE VC+12,12
   :POKE VC+13,227:POKE VC+39,11
   :POKE VC+40,7'KPWQ
620 POKE VC+41,2:POKE VC+42,2
   :POKE VC+43,3:POKE VC+44,0
   :POKE VC+45,11:POKE V,5'LOKR
630 FOR P=192 TO 198:FOR Y=0 TO 63
   :READ K:POKE P*64+Y,K:NEXT Y,P
   :POKE V,0:POKE VB,0'NJDS
640 GOSUB 1690:POKE G,PEEK(G)OR
   16'EMSJ
650 Y=-1:Y$="":X=0:XX=0:T=T+1
   :IF CO THEN GOSUB 1080'KXHR
660 GOSUB 960:GOSUB 1690
   :PRINT"[GRAY1]ENTER ANSWER-"
   :PRINT"PRESS RETURN[BLUE]"
   :PRINT'FLYT
670 IF PL>-1 THEN XX=PL'FHNM
680 IF RT>0 OR CO=4 THEN 1090'FKUN
```

```
690 GOSUB 790:F=X:GOSUB 710:GOSUB 720
    :PRINT T$" [BLUE]"X:F=XX:GOSUB 710
    :GOSUB 720'IFXU
700 GOSUB 750:GOSUB 710
    :PRINT SPC(H)"[SHFT *4]"
    :GOSUB 710'FOMJ
705 F=N:GOSUB 720:GOSUB 970
    :GOTO 810'EOEL
710 PRINT:PRINT"[UP]";:RETURN'DDBF
720 PRINT T$;:IF F<10 THEN PRINT O$;
    'FKNI
730 NX=99:FOR I=1 TO 4:IF F>NX THEN
    PRINT"[LEFT]";:NX=NX*10+9'LVSR
740 NEXT:RETURN'CBXG
750 PRINT T$;:IF B=1 THEN PRINT"+"XX
    :N=X+XX'HNLO
760 IF B=2 THEN PRINT"-"XX:N=X-XX'GJMN
770 IF B=3 THEN PRINT"X"XX:N=X*XX'GJHO
780 RETURN'BAQJ
790 IF XX>X THEN ZX=X:X=XX:XX=ZX'GPHS
800 RETURN'BAQC
810 KF=KF-4:IF KF<9 THEN KF=9'GMYK
820 POKE VC+10,KF:IF Y<>N THEN WR=WR+1
    :GOTO 920'JTVO
830 PRINT"[DOWN2,BLUE]"C$"!":RI=RI+1
    :JJ=JJ-7:M=JJ+21:POKE S+3,1
    :POKE S+6,249'LHQU
840 POKE S+1,6:POKE S+4,129
    :POKE VC+21,57'GTAO
850 TP=TP+1:FOR P=1 TO 55:NEXT
    :POKE VC+21,61:IF TP=11 THEN
    880'LCPU
860 FOR P=1 TO 55:NEXT:POKE VC+21,59
    :IF TP=13 THEN 890'JVKS
870 GOTO 850'BDMK
880 POKE VC+1,JJ:POKE VC+3,M
    :POKE VC+5,M:POKE VC+7,M
    :GOTO 850'JDMW
890 POKE S+4,0:POKE VC+21,49'EMBQ
895 IF JJ<41 THEN GOSUB 1690
    :GOSUB 1040:PRINT"[YELLOW]"
    :GOTO 1650'HTYY
900 IF KF=9 THEN 1580'DHXG
910 TP=0:FOR P=1 TO 500:NEXT
    :GOTO 650'GOXK
920 PRINT"[DOWN,RED]SORRY...."
    :PRINT"[DOWN]THE TOTAL IS"
    :PRINT"[DOWN,PURPLE]"SPC(8)N'EFRP
925 IF KF=9 THEN 1580'DHXN
930 JJ=JJ+10:M=JJ+21:IF JJ>225 THEN
    JJ=226:GOTO 1620'JDQS
940 POKE VC+1,JJ:POKE VC+3,M
    :POKE VC+5,M:POKE VC+7,M
    :GOSUB 1660'JEOT
945 FOR P=1 TO 10:POKE S,LF'EJEQ
950 POKE S+1,HF:POKE S+4,33:LF=LF-1
    :HF=HF-1:NEXT'JYIT
955 POKE S+4,0:FOR P=1 TO Z:NEXT
    :GOTO 910'HNPU
960 X=INT(RND(1)*RD(A))+RP(A)
    :XX=INT(RND(1)*RR(A))+RN(A)
    :RETURN'LKYY
970 Y$="":POKE 198,0:IF A=8 THEN
    PRINT"? ";:GOTO 990'HQUS
980 PRINT T$"[BLUE]? [BLACK]";'BDQN
990 WAIT 198,15:GET Z$:Z=ASC(Z$)
    :IF Z>47 AND Z<59 THEN Y$=Y$+Z$
    :PRINT"[BLUE]"Z$;'MHHC
1000 ZL=LEN(Y$):IF ZL>6 THEN Z=20
    :GOTO 1020'HSNB
1010 IF Z=13 AND ZL THEN Y=VAL(Y$)
    :PRINT O$:RETURN'IOMC
1020 IF Z=20 AND ZL THEN Y$=LEFT$(Y$,
    ZL-1):PRINT"[BLACK,LEFT,RVS]
    [RVOFF,LEFT]";'IRIH
1030 GOTO 990'BDRW
1040 IF T<2 THEN 1070'DGAA
1050 PRINT T$"[DOWN,GRAY2]OUT OF"
    :PRINT"[DOWN,RED]"T"[GRAY2]
    PROLBEMS":PRINT T$"[DOWN]YOU HAD
    [BLUE]"'DHXJ
1060 PRINT"[DOWN]"RI"[GRAY2]"C$" AND"
    :PRINT"[DOWN,BLUE]"WR"[GRAY2]"I$
    :PRINT T$"[DOWN]ANSWERS!"
    :RETURN'ENQJ
1070 PRINT D$"[GRAY2]YOU NEVER GOT",,,
    "[DOWN]OFF THE GROUND!",,,"[DOWN,
    BLUE]WHAT HAPPENED??"'BICO
1075 RETURN'BAQF
1080 I=CO:CO=QC(I):B=QC(I):RETURN'ETRI
1090 IF XX=0 THEN XX=INT(RND(1)*5)
    +1'IMLK
1100 F=XX:PRINT"[DOWN,BLUE]"
    :GOSUB 1130:IF F>9 THEN PRINT O$;
    :IF F>99 THEN PRINT O$;'LWDG
```

```
1110 PRINT T$"[SHFT U,SHFT *7]"
     :GOSUB 1130:F=X*XX
     :PRINT XX"[SHFT -]"F:PRINT
     :PRINT"[LEFT2,UP4]"'HSMO
1120 GOSUB 1160:PRINT T$;:GOSUB 970
     :N=X:PRINT"[DOWN]":GOTO 810'GUUE
1130 PRINT"[SPACE2]";:IF F<10 THEN
     PRINT O$;'FIHC
1140 IF F>99 THEN PRINT"[LEFT]";
     :IF F>999 THEN PRINT"[LEFT]";
     'IKPG
1150 RETURN'BAQY
1160 IF F<10 THEN RETURN'EDAD
1170 XY=LEN(STR$(F)):L=LEN(STR$(X))
     :IF XY=L THEN RETURN'KSBM
1180 FOR I=1 TO 3:IF L+(I)<=XY THEN
     PRINT O$;'JNUK
1190 NEXT:RETURN'CBXE
1200 PRINT"[CLEAR,DOWN5,RED]
      ENTER THE NUMBER (FROM 0 TO
     999) WHICH",T$'BDEG
1205 PRINT"[DOWN]YOU WISH TO ";'BBPE
1210 PRINT"APPEAR IN THE PROBLEMS",
     'BBEC
1215 PRINT"[DOWN2,BLUE,SPACE2]
     A ZERO IN PROBLEMS OF DIVISION
     WILL"'BAOL
1220 PRINT"[DOWN,SPACE2]
     PRODUCE A RANDOM NUMBER FROM 1
     TO 5[DOWN2]",S$"[LEFT,GRAY1]
     PRESS RETURN[DOWN2]"'BDFM
1230 PRINT"NUMBER";:GOSUB 970:PL=Y
     :IF PL<0 OR PL>999 THEN 1200'IWOK
1240 PRINT L$"[DOWN2] YOU HAVE
     SELECTED NUMBER[RED]"PL
     :FOR P=1 TO 2000:NEXT
     :GOTO 370'GQYN
1250 POKE VC+21,0:POKE G,
     PEEK(G)AND 239:PRINT"[CLEAR]"RI;
     C$S$" "WR;I$'GDQL
1260 IF A<7 AND B<3 OR B=5 THEN
     1340'HKMH
1270 PRINT D$L$"[DOWN2,BLUE,SPACE2]
     YOU HAVE MET THE REQUIREMENTS"'B
     EXM
1280 PRINT Q$"[DOWN3]TO QUALIFY YOU
     AS[DOWN3]"'BCXJ
1290 IF ZS=1 THEN PRINT" A KITE
     FLYER!! YOU NEED MORE TRAINING."
     :GOTO 1330'FIJS
1300 IF T<30 THEN PRINT"[SPACE2]
     A TOPNOTCH PILOT!
     CONGRATULATIONS!!"'EDKJ
1310 IF T>29 AND T<38 THEN PRINT"
     [SPACE4]A GOOD PILOT WITH HIGH
     POTENTIAL."'GGUL
1320 IF T>37 THEN PRINT P$"A
     CO-PILOT.[SPACE2]KEEP
     TRYING!!"'EFJI
1330 PRINT"[DOWN,RED]":GOTO 1510'CFEB
1340 PRINT SPC(17)"[DOWN,CMDR O6]":M=3
     :Y=15:X=10:K=-2:L=4
     :GOSUB 1550'JALQ
1345 M=3:Y=10:X=20:K=-1'FNTL
1350 L=2:GOSUB 1550:M=1:Y=7:X=26:K=0
     :L=0:GOSUB 1570'IDHM
1355 IF ZS THEN GOSUB 1550
     :GOTO 1370'ELVK
1360 PRINT P$"[RVS,SPACE6,RVOFF,
     SHFT POUND]"T$"[CMDR *,RVS,
     SPACE4,RVOFF,SHFT POUND]"T$"
     [CMDR *,RVS,SPACE6]"'BGIK
1370 PRINT P$"[RVS,SPACE6,RVOFF]"L$"
     [RVS,SHFT SPACE,SPACE3,RVOFF]
     "L$"[RVS,SPACE6]"'BGBI
1375 IF T>29 AND T<38 THEN GOSUB 1550
     :GOTO 1400'HPMP
1380 IF T>37 AND ZS<>1 THEN PRINT P$"
     [RVS,SPACE6,SHFT POUND,RVOFF,
     SPACE3,RVS,CMDR *,SPACE4,
     SHFT POUND,RVOFF,SPACE3,RVS,
     CMDR *,SPACE6]":GOTO 1400'INLT
1390 PRINT P$"[RVS,SPACE6,SHFT POUND,
     SPACE3,CMDR *,SPACE4,SHFT POUND,
     SPACE3,CMDR *,SPACE6]"'BCRL
1400 GOSUB 1550:IF ZS<>1 THEN GOSUB
     1550:GOTO 1420'HRGE
1410 PRINT P$"[RVS,CMDR J,SPACE6,
     RVOFF] [RVS,SPACE17,CMDR L]"
     :GOTO 1450'CHOF
1420 GOSUB 1570:IF T<38 THEN PRINT
     P$" [RVS,SPACE7,RVOFF] [RVS,
     SPACE8,RVOFF] [RVS,SPACE7]"'FKRI
1430 IF T<30 THEN PRINT J$"[RVS,
     SPACE7,RVOFF,SPACE8,RVS,SPACE7]"
     :GOTO 1450'FKQI
1440 IF T<38 THEN PRINT J$"[RVS,
     SPACE7,RVOFF] [RVS,SPACE6,RVOFF]
      [RVS,SPACE7]"'EFXI
1450 M=1:Y=8:X=24:K=1:L=-2
     :IF T>37 AND ZS<>1 THEN GOSUB
     1550'NBWQ
1460 IF ZS THEN M=2:GOSUB 1550'EJLH
1470 IF T>37 AND ZS<>1 THEN GOSUB
     1550'HKIK
1480 PRINT J$" [RVS,SPACE7]"SPC(6)"
     [SPACE7]":IF ZS<>1 THEN Y=11:X=18
     :GOSUB 1550:GOTO 1500'KAYS
1490 PRINT Q$"[RVS,SPACE6,CMDR J,
     SPACE4,CMDR L,SPACE2,RVOFF] [RVS,
     SPACE3]"'BCYL
1500 M=2:Y=13:X=14:K=2:L=-4:GOSUB 1550
     :PRINT SPC(17)"[RVS,CMDR I6]
     "'JAFN
1510 POKE G,PEEK(G)OR 16
     :PRINT"[DOWN2]"Q$"PLAY AGAIN?
     [SPACE2](Y/N)";'ELNI
1520 GET A$:IF A$="Y"THEN RUN 340'FIEF
1530 IF A$="N"THEN END'ECYE
1540 GOTO 1520'BEFD
1550 FOR J=1 TO M:FOR I=1 TO Y
     :PRINT" ";:NEXT:FOR I=1 TO X
     :PRINT"[RVS] ";:NEXT:PRINT'OSFQ
1560 Y=Y+K:X=X+L:NEXT:RETURN'GJKK
1570 PRINT P$"[RVS,CMDR J,SPACE24,
     CMDR L]":RETURN'CDIL
1580 X=INT((238-JJ)/6):IF X<2 THEN
     POKE VC+1,226:GOTO 1620'KBMS
1590 GOSUB 1660:FOR P=1 TO X:POKE S,LF
     :POKE S+1,HF:POKE S+4,33
```

```
      :IF JJ=226 THEN P=X'NIZX
1600 POKE VC+1,JJ:JJ=JJ+6
      :IF JJ>226 THEN JJ=226'IXIJ
1610 LF=LF-3:HF=HF-3:NEXT
      :POKE S+4,0'HREI
1620 POKE VC+21,240:GOSUB 1670
      :FOR P=1 TO 9:POKE S,15
      :POKE S+1,HF:HF=HF-1:NEXT'MKJQ
1630 POKE S+24,0:FOR P=1 TO 500:NEXT
      :X=8:Z=18:GOSUB 1750:GOSUB 1710
      :FOR P=1 TO 500'NKYR
1640 NEXT:GOSUB 1690:GOSUB 1040
      :FOR P=1 TO 2600:NEXT
      :PRINT"[BLUE]":ZS=1
      :GOTO 1250'KDCP
1650 X=1:Z=7:GOSUB 1750:GOSUB 1710
      :FOR P=1 TO 2600:NEXT
      :GOTO 1250'JDYP
1660 Z=1200:LF=151:HF=170:POKE S+5,30
      :POKE S+6,7:RETURN'IEHQ
1670 HF=9:FOR L=0 TO 24:POKE S+L,0
      :NEXT:POKE S+14,5:POKE S+18,14
      :POKE S+3,211'NJLV
1680 POKE S+24,136:POKE S+6,221
      :POKE S+4,129:RETURN'HWXQ
1690 PRINT"[HOME]";:PRINT S$" [GREEN]
      *":FOR I=1 TO 6:PRINT S$" *"
      :PRINT S$"[SPACE2]":NEXT'IPDR
1700 PRINT S$" *":PRINT"** * * * * *
      * * ":PRINT"[HOME]";:RETURN'EGDG
1710 POKE S+5,30:POKE S+6,7
      :POKE S+12,30:POKE S+13,7
      :POKE S+24,15:FOR I=X TO Z'NJEQ
1720 POKE S+1,HF(I):POKE S+8,HH(I)
      :POKE S,LF(I):POKE S+7,LL(I)
      :POKE S+4,33'JPGQ
1730 POKE S+11,33:FOR P=1 TO DR(I)
      :NEXT:POKE S+4,32:POKE S+11,32
      :FOR P=1 TO 50:NEXT'OJNT
1740 NEXT:RETURN'CBXF
1750 FOR L=0 TO 24:POKE S+L,0:NEXT
      :POKE S+24,15:POKE S,151
      :POKE S+1,170:RETURN'MGJT
1760 DATA 33,25,135,30,250,33,25,135,
     30,63,33,25,135,30,63,33,25,135,
     30,250'BPJS
1770 DATA 33,25,135,30,63,33,25,135,
     30,63'BGON
1775 DATA 44,33,135,195,1150,8,6,97,
     71,750'BHOS
1777 DATA 8,6,97,71,375,8,6,97,71,190,
     8,6,97,71,750'BQUW
1780 DATA 9,5,247,152,375,9,5,104,152,
     190,9,5,104,152,190,8,6,97,71,
     375'BLMU
1790 DATA 8,5,97,152,375,7,6,233,71,
     470,8,6,97,71,1500,2,1,4,3,6,,6,,
     9,1'BMGV
1800 DATA 6,,9,1,10,,31,10,9,1,91,10,
     9,1,91'BIKH
1805 DATA 10,90,10,901,100,900,100,,
     24,,,24,,0'BLIN
1810 DATA 60,,,36,,,36,,,60,,,126,,,
     126,,,126,,,126,,,255,0'BYGL
1820 DATA 1,255,128,3,255,192,7,255,
     224,15,255'BLWK
1825 DATA 240,31,255,248,,126,,,126,,,
     255,0'BIVO
1830 DATA 0,173,,,255,,,,74,,,149,,,
     165,,1,74'BKXL
1835 DATA 128,,132,,,74,,,165,,,20,,,
     74,,0'BHTP
1840 DATA 20,,,40,,,,,,,,,,,,,,,,,,,,,,
     ,,,,,,,,,,,,,,255'BTON
1845 DATA,,,255,,,255,,,255,,,255'BYDP
1850 DATA 0,,126,,,60,,,60,,,24,,,,,,,
     ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
     1'BLUR
1855 DATA 165,128'BHEM
1860 DATA 0,132,,3,74,128,,165,,1,
     85'BBPM
1865 DATA 128,,74,,,74,,,132,,,165,,,
     40,,,20,,,,,,,,,,0'BSDU
1870 DATA 0,,,,,,,,,,,,,,,,,,,,
     255,223,255,111,252'BTAQ
1875 DATA 254,57,255,244,31,191,
     184'BAYS
1880 DATA 7,255,224,1,247'BPHM
1885 DATA 128,,126,,,,,,,,,,,,,,,,
     ,,,,,,,,,,,,,,,,,,,,0'BEAX
1890 DATA 0,,,4,,,14,,,31'BPJN
1895 DATA,,,,,,,,,,,,,,,,,,,,,,,,
     ,,,,,,,,,,,,,,,,,,,,0'BFAY
1900 DATA 0,,,,,,,,,,,,,,,,,,,,,,
     ,,,,,,,,16,,,24,0'BVSK
1910 DATA 0,24,,,36,,,60,,,255,,7,255,
     224,15,255,240,6,,96,,,0'BCEN
```

END

by Sharon R. Siegel

Memory Challenge

for the Commodore 64

When my daughter was three, she and I started playing a game together we called the matching game. Using a deck of Old Maid cards (with the Old Maid removed), we'd lay the cards out face down, then take turns trying to find two cards that matched each other. When we'd find a match, we'd take the cards out of play and keep them off to the side. At the end of the game, the player with the most matches won the game.

After learning how to program my Commodore 64 in BASIC, I decided to have a go at programming a computer matching game. The result, several months and revisions later, is Memory Challenge.

Among the many changes from the first version to the final one was my use of the FOR-NEXT loop. My original game used only seven loops, was awkward to type and was slow. By making use of the power of the FOR-NEXT loop (there are now 35), I was able to speed up the game, add more cards, add a title screen and music, and still use the same amount of memory. In addition, the game originally accommodated only two players. Now up to four players may compete, or one player may practice against his/her own score.

The most fun (and challenging!) part of the programming was designing the cards. These, of course, can be changed to your own creations and can be found on lines 590-950 and lines 1840-2010. They were separated in order to place a few selected designs on the title screen.

The original version was difficult for my daughter to play. The cards were numbered, and an INPUT statement asked for two cards to be shown at once, separated by a comma. Try to explain that to a child who hasn't learned her numbers past ten, and has no idea what a comma is! She soon lost interest in playing the game, and for a while it sat on the shelf.

Typing in a game from a magazine one day, I came across the solution to my problem. By using a joystick (plugged into port #1), a cursor could be moved to the desired card, and pressing the button could expose it! This method works great and also gives the added advantage of exposing only one card at a time.

Remember, only two cards may be shown per turn. The computer keeps track of whose turn it is and gives the player an extra turn if a match is found. At the end of the game, everyone's scores are shown and the winner is announced. In the one-player game, your score is updated after every turn and shown at the top of the screen.

My daughter and I are again enjoying the game, computer-style. She is six now and wins as often as I do, so I practice frequently with the one-player game. I have yet to break the 26-try barrier mentioned on line 1570.

"Luck," I say, "is all in how the cards fall." You give it a try.

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

Memory Challenge

```
20 DIM B$(9,4),C$(36,4),L$(37),A(36),
   D(36),P$(4),TR(10),H(10)'BEYI
30 DIM N1(33),N2(33),S(20),T(20),
   G(30),W$(30),HS(30),LE(30),J(12),
   K(12)'BOUM
40 GOSUB 1790'BESB
50 FOR X=1 TO 8:READ N3(X),N4(X),DR(X)
   :NEXT'FWBJ
60 FOR X=1 TO 36:READ D(X):NEXT'FKAH
70 FOR X=1 TO 12:READ J(X),K(X)
   :NEXT'FPHJ
80 PRINT"[CLEAR]":POKE 53281,14
   :POKE 646,1'DPUJ
90 PRINT"[HOME,DOWN]*** MEMORY
   CHALLENGE ***":PRINT'CBRM
100 INPUT"HOW MANY PLAYERS (1-4)";
    K'BCNB
110 IF K=1 THEN 140'DFTX
120 IF K<2 OR K>4 THEN 90'FGUB
130 GOTO 200'BDBY
140 Z$(1)="[WHITE]":Z(1)=1:PRINT
    :INPUT"WHAT IS YOUR NAME";
    P$(1)'ETHK
150 PRINT'BACA
155 PRINT"TRY TO UNCOVER ALL OF THE
    MATCHES IN AS FEW TRIES AS
    POSSIBLE"'BAJV
160 POKE 214,20:PRINT:PRINT"[SPACE5]
    PRESS THE SPACE BAR TO BEGIN"'DILM
170 GET Q$:IF Q$=""THEN 170'EIOG
180 IF Q$<>CHR$(32)THEN 170'FJGI
190 GOTO 275'BDNF
200 PRINT:INPUT"NAME OF FIRST PLAYER";
    P$(1)'CHFE
210 Z$(1)="[WHITE]":Z(1)=1'CLAA
220 PRINT:INPUT"NAME OF SECOND
    PLAYER";P$(2)'CHIG
230 Z$(2)="[CYAN]":Z(2)=3
    :IF K=2 THEN 275'FRKG
240 PRINT:INPUT"NAME OF THIRD PLAYER";
    P$(3)'CHYH
250 Z$(3)="[BLUE]":Z(3)=6
    :IF K=3 THEN 275'FRNI
260 PRINT:INPUT"NAME OF FOURTH
    PLAYER";P$(4)'CHNK
270 Z$(4)="[YELLOW]":Z(4)=7'CLKH
275 PL=1267:LO=1106:TL=0:TR=0'EVJP
280 REM SHUFFLE CARDS'BMJI
290 PRINT:PRINT" PLEASE WAIT WHILE I
    SHUFFLE THE CARDS."'CBPQ
300 A(1)=INT(RND(1)*36)+1'FMRC
310 FOR X=2 TO 36'DEBA
320 A(X)=INT(RND(1)*36)+1'FMGE
330 FOR Y=1 TO X-1:IF A(X)=A(Y)THEN
    Y=1:GOTO 320'JTCK
340 NEXT Y,X:PRINT"[CLEAR]"'CEWD
350 REM LAY DOWN THE CARDS'BPAG
380 FOR X=1 TO 4:L=LO:FOR Y=1 TO 9
    :FOR Z=1 TO 12'KQHP
```

```
390 POKE L+J(Z),K(Z):POKE L+J(Z)+CO,7
    :NEXT Z'GWVP
400 L=L+4:NEXT Y'DFKB
410 LO=LO+200:NEXT X'DJFD
500 R$="[RIGHT4]":D$="[DOWN5]"'CFSC
510 L$(1)="[HOME,DOWN2,RIGHT2]"
    :Z=2'CIND
520 FOR X=1 TO 4'DDWD
530 FOR Y=1 TO 8:L$(Z)=L$(Z-1)+R$
    :Z=Z+1:NEXT Y'JXUN
540 L$(Z)=L$(Z-9)+D$:Z=Z+1'FRNK
550 NEXT X'BBRE
560 FOR X=1 TO 9:FOR Y=1 TO 4'GHDK
570 C$(A(X),Y)=B$(X,Y):C$(A(X+18),
    Y)=B$(X,Y)'DMNQ
580 NEXT Y,X'BDTI
590 REM CARD DESIGNS 10-18'BQWM
600 C$(A(10),1)="[BLACK,CMDR D,SPACE2]
    ":C$(A(28),1)=C$(A(10),1)
    :REM DOG'DNXK
610 C$(A(10),2)="[DOWN,SHFT Q]
    [SHFT N]":C$(A(28),2)=C$(A(10),
    2)'CJWK
620 C$(A(10),3)="[DOWN2] [RVS] [RVOFF]
    ":C$(A(28),3)=C$(A(10),3)'CJKK
630 C$(A(10),4)="[DOWN3,CMDR N]
    [CMDR H]":C$(A(28),4)=C$(A(10),
    4)'CJWM
640 C$(A(11),1)="[RVS,BLACK,
    SHFT POUND] [CMDR *,RVOFF]"
    :C$(A(29),1)=C$(A(11),1)
    :REM BARN'DOQQ
650 C$(A(11),2)="[DOWN,RVS,RED,CMDR H]
     [CMDR N,RVOFF]":C$(A(29),
    2)=C$(A(11),2)'CJXP
660 C$(A(11),3)="[DOWN2,RVS,CMDR C]
    [CMDR V,RVOFF]":C$(A(29),
    3)=C$(A(11),3)'CJRQ
670 C$(A(11),4)="[DOWN3,RVS,CMDR H,
    BLACK] [RED,CMDR N,RVOFF]"
    :C$(A(29),4)=C$(A(11),4)'CJHR
680 C$(A(12),1)="[SPACE3]"
    :C$(A(30),1)=C$(A(12),1)
    :REM ANT'DNYR
690 C$(A(12),2)="[DOWN,BLACK]V[SPACE2]
    ":C$(A(30),2)=C$(A(12),2)'CJWR
700 C$(A(12),3)="[DOWN2,SHFT Q,SPACE2]
    ":C$(A(30),3)=C$(A(12),3)'CJUJ
710 C$(A(12),4)="[DOWN3,CMDR +,
    CMDR B2]":C$(A(30),4)=C$(A(12),
    4)'CJFM
720 C$(A(13),1)="[SPACE3]"
    :C$(A(31),1)=C$(A(13),1)
    :REM BULL'DOXN
730 C$(A(13),2)="[DOWN,BLACK,SHFT J,
    CMDR I,SHFT K]":C$(A(31),
    2)=C$(A(13),2)'CJHO
740 C$(A(13),3)="[DOWN2] [RVS,CMDR F]
     [RVOFF]":C$(A(31),3)=C$(A(13),
    3)'CJKO
750 C$(A(13),4)="[DOWN3] [CMDR L2]"
    :C$(A(31),4)=C$(A(13),4)'CJLP
760 C$(A(14),1)="[SPACE3]"
    :C$(A(32),1)=C$(A(14),1)
    :REM BEE'DNHQ
770 C$(A(14),2)="[DOWN,BLACK]V( "
    :C$(A(32),2)=C$(A(14),2)'CJHR
780 C$(A(14),3)="[DOWN2,SHFT Q,YELLOW,
    RVS] [BLACK] ":C$(A(32),
    3)=C$(A(14),3)'CJLT
790 C$(A(14),4)="[DOWN3] [CMDR Z2]"
    :C$(A(32),4)=C$(A(14),4)'CJVT
800 C$(A(15),1)="[BROWN,SPACE2,CMDR I]
    ":C$(A(33),1)=C$(A(15),1)
    :REM BOOT'DOIN
810 C$(A(15),2)="[DOWN,SPACE2,RVS,
    CMDR -,RVOFF]":C$(A(33),
    2)=C$(A(15),2)'CJEM
820 C$(A(15),3)="[DOWN2,CMDR D,SHFT ^,
    RVS] [RVOFF]":C$(A(33),
    3)=C$(A(15),3)'CJTO
830 C$(A(15),4)="[DOWN3,CMDR C,RVS,
    CMDR I2,RVOFF]":C$(A(33),
    4)=C$(A(15),4)'CJSP
840 C$(A(16),1)="[BROWN] [SHFT ^] "
    :C$(A(34),1)=C$(A(16),1)
    :REM COWBOY'DQHS
850 C$(A(16),2)="[DOWN,CMDR Y,WHITE]O
    [BLACK,CMDR Y]":C$(A(34),
    2)=C$(A(16),2)'CJYR
860 C$(A(16),3)="[DOWN2,RED]([RVS]
    [RVOFF])":C$(A(34),3)=C$(A(16),
    3)'CJKR
870 C$(A(16),4)="[DOWN3,BLACK,CMDR L,
    CMDR Y,CMDR J]":C$(A(34),
    4)=C$(A(16),4)'CJKT
880 C$(A(17),1)="[BLUE,RVS]
```

```
     :[RED,SPACE2,RVOFF]"
     :C$(A(35),1)=C$(A(17),1)
     :REM FLAG'DOJV
890 C$(A(17),2)="[DOWN,BLUE,RVS]
     :[WHITE,SPACE2,RVOFF]"
     :C$(A(35),2)=C$(A(17),2)'CJJU
900 C$(A(17),3)="[DOWN2,RED,RVS,
     SPACE3,RVOFF]":C$(A(35),
     3)=C$(A(17),3)'CJUM
910 C$(A(17),4)="[DOWN3,BLACK,RVS,
     CMDR L,RVOFF,SPACE2]"
     :C$(A(35),4)=C$(A(17),4)'CJBO
920 C$(A(18),1)="[SPACE3]"
     :C$(A(36),1)=C$(A(18),1)
     :REM TRACTOR'DRWQ
930 C$(A(18),2)="[DOWN,RED,CMDR D,RVS,
     CMDR C,RVOFF,SHFT W]"
     :C$(A(36),2)=C$(A(18),2)'CJDQ
940 C$(A(18),3)="[DOWN2,RVS,CMDR K,
     CMDR I,CMDR F,RVOFF]"
     :C$(A(36),3)=C$(A(18),3)'CJFR
950 C$(A(18),4)="[DOWN3,BLACK,SHFT W]
     O":C$(A(36),4)=C$(A(18),4)'CJBR
960 PRINT"[HOME,DOWN]":FOR X=1 TO
     4'EENM
970 PRINT"[DOWN4,SPACE3,SHFT W,SPACE3,
     SHFT W,SPACE3,SHFT W,SPACE3,
     SHFT W,SPACE3,SHFT W,SPACE3,
     SHFT W,SPACE3,SHFT W,SPACE3,
     SHFT W,SPACE3,SHFT W]":NEXT'CBTW
980 W=1:V=1:TR=0:PC=1:PE=0
     :FOR X=1 TO K:SC(X)=0:NEXT'KEDY
985 IF K>1 THEN PRINT"[HOME,DOWN]";
     P$(1);", YOU BEGIN"'EJTX
990 IF K=1 THEN PRINT"[HOME,DOWN]
     TRIES ="TR"[SPACE8]
     MATCHES ="TL'EGHV
995 REM MAIN PLAY'BIIT
1000 JY=PEEK(56321):FI=JY AND 16
     :JY=15-(JY AND 15):BL=PL
     :POKE PL,87:POKE PL+CO,1'LUFL
1010 IF JY=1 OR JY=5 OR JY=9 THEN
     PL=PL-200:GOTO 1050'KVXF
1020 IF JY=2 OR JY=6 OR JY=10 THEN
     PL=PL+200:GOTO 1050'KWJH
1030 IF JY>3 AND JY<7 THEN
     PL=PL-4'HLOD
1040 IF JY>7 THEN PL=PL+4'FIHC
1050 P$=P$(W):IF K=1 THEN P$="WELL
     DONE"'FMGG
1060 IF PE=81 THEN POKE BL,81
     :POKE BL+CO,PC'GRUG
1070 PE=PEEK(PL):PC=PEEK(PL+CO)'FPUH
1080 IF PE<>87 AND PE<>81 THEN PL=BL
     :PE=PEEK(PL):PC=PEEK(PL+CO)'NDHR
1090 POKE PL,160:POKE PL+CO,Z(W)
     :FOR TT=1 TO 70:NEXT TT'HAEM
1100 IF PE=81 THEN 1000'DIMW
1110 IF FI<>16 THEN 1130'EIFY
1120 GOTO 1000'BEXW
1130 FOR X=1 TO 36:IF PL=D(X)THEN Z=X
     :F(V)=PL:GOTO 1150'JAKI
1140 NEXT'BAEX
1150 IF V=1 THEN S=Z:GOTO 1180'FJLE
1160 IF Z=S THEN 1000'DGGD
1170 PRINT"[HOME,DOWN,SPACE40]":T=Z
     :GOTO 1190'DIDJ
1180 FOR X=1 TO 4:PRINT L$(S);C$(S,X)
     :NEXT X:V=2:GOTO 1000'HCFM
1190 FOR X=1 TO 4:PRINT L$(T);C$(T,X)
     :NEXT X:V=1:TR=TR+1'IDYO
1200 IF C$(S,3)<>C$(T,3)THEN 1280'ESDB
1210 GOSUB 1350:PRINT"[HOME,DOWN]";
     Z$(W);P$;", YOU GOT A
     MATCH!!!"'CPWF
1220 GOSUB 1680:SC(W)=SC(W)+1
     :TL=TL+1'FWPF
1230 POKE F(1),81:POKE F(1)+CO,Z(W)
     :POKE F(2),81'ECMG
1235 POKE F(2)+CO,Z(W):PE=81
     :PC=Z(W)'EXCL
1240 FOR TT=1 TO 100:NEXT TT'EJOD
1250 IF TL=18 THEN 1360'DIHD
1260 IF K=1 THEN 1340'DGOE
1270 GOSUB 1350:PRINT"[HOME,DOWN]";
     Z$(W);"YOU GET TO GO AGAIN!"
     :GOTO 1000'DRVM
1280 GOSUB 1350:PRINT"[HOME,DOWN]";
     Z$(W);"SORRY, ";P$(W);"..."'CTXK
1290 FOR TT=1 TO 1200:NEXT TT'EKOI
1300 PRINT L$(S);"[YELLOW,SHFT O,
     CMDR Y,SHFT P,DOWN,LEFT3,CMDR J,
     CMDR B,CMDR L,DOWN,LEFT3,CMDR J,
     CMDR B,CMDR L,DOWN,LEFT3,SHFT L,
     CMDR P,SHFT @]"'BGAN
1310 PRINT L$(T);"[SHFT O,CMDR Y,
     SHFT P,DOWN,LEFT3,CMDR J,CMDR B,
     CMDR L,DOWN,LEFT3,CMDR H,CMDR B,
     CMDR L,DOWN,LEFT3,SHFT L,CMDR P,
     SHFT @]":IF K=1 THEN 1340'ENUQ
1320 W=W+1:IF W>K THEN W=1'GIBE
1330 GOSUB 1350:PRINT"[HOME,DOWN]";
     Z$(W);"IT'S ";P$(W);"'S TURN"
     :GOTO 1000'DYJJ
1340 GOSUB 1350:PRINT"[HOME,DOWN]
     TRIES = "TR"[SPACE8]MATCHES ="TL
     :GOTO 1000'DONK
1350 PRINT"[HOME,DOWN,SPACE40]"
     :RETURN'CBHH
1360 REM END OF GAME'BJVF
1370 PRINT"[CLEAR,WHITE]":PRINT:G=G+1
     :IF G>10 THEN G=1:H=1'JOXM
1380 IF K=1 THEN 1550'DGRH
1390 PRINT"THERE WAS A TOTAL OF 18
     MATCHES:":PRINT'CBUO
1400 FOR X=1 TO K:PRINT"[SPACE5]";
     P$(X);" FOUND "SC(X)" OF THEM"
     :NEXT'FRRI
1410 H(G)=SC(1):FOR X=2 TO K
     :IF SC(X)>H(G)THEN
     H(G)=SC(X)'IHGK
1415 NEXT'BAED
1420 PRINT:PRINT"WINNERS..."
     :PRINT'DCXD
1430 FOR X=1 TO K:IF SC(X)<>H(G)THEN
     1470'HRBI
1440 LE=18-LEN(P$(X)):PRINT"GAME"G"
     [SPACE4]";P$(X);SPC(LE);H(G)'FDCM
1450 H=H+1:W$(H)=P$(X):HS(H)=H(G)
     :G(H)=G:LE(H)=LE'GNSO
```

```
1460 FOR T=1 TO 100:NEXT T'EHCG
1470 NEXT'BAEE
1480 PRINT:IF G=1 THEN 1510'EHUI
1490 FOR X=1 TO H:PRINT"[RVS]
     GAME"G(X)"[RVOFF,SPACE5,RVS]";
     W$(X);"[RVOFF]";SPC(LE(X));"[RVS]
     "HS(X)"[RVOFF]"'FDQT
1500 NEXT'BAEX
1510 PRINT:PRINT"[SPACE3]
     PRESS THE SPACE BAR TO PLAY
     AGAIN"'CBRJ
1515 GET JUNK$:IF JUNK$<>""THEN
     1515'FPTK
1520 GET Q$:IF Q$=""THEN 1520'EJME
1530 IF Q$=CHR$(32)THEN 275'EJPF
1540 END'BACC
1550 REM ONE PLAYER STATISTICS'BTWJ
1560 TR(G)=TR'BHYG
1570 IF TR<26 THEN PRINT"WOW!!!"
     :GOTO 1600'FJUL
1580 IF TR<36 THEN PRINT"CONGRATULATI
     ONS!":GOTO 1600'FJUP
1590 PRINT"GOOD TRY!"'BAJK
1600 PRINT"IT TOOK YOU"TR"TRIES TO
     FIND THE 18[SPACE5]MATCHES."'BCTL
1610 IF G=1 THEN 1640'DGND
1620 PRINT:PRINT"YOUR STANDINGS..."
     :PRINT'DCRH
1630 FOR X=1 TO G:PRINT"[RVS]GAME"X"
     [RVOFF,SPACE5,RVS]"TR(X)"[RVOFF]"
     :NEXT'FLDK
1640 PRINT:PRINT"WOULD YOU LIKE TO
     TRY AGAIN? (Y/N)"'CBRN
1650 GET JUNK$:IF JUNK$<>""THEN
     1650'FPTK
1655 GET Q$:IF Q$=""THEN 1655'EJVN
1660 IF Q$="Y"THEN 275'DFFI
1670 END'BACG
1680 REM MUSIC'BFQJ
1690 FOR X=0 TO 23:POKE SO+X,0
     :NEXT'GLFO
1700 POKE SO+2,255:POKE SO+5,9
     :POKE SO+24,15'GVSI
1710 FOR X=1 TO 8'DDBD
1720 POKE SO+1,N3(X):POKE SO,
     N4(X)'DSBI
1730 POKE SO+4,65:FOR T=1 TO DR(X)
     :NEXT T'GQVK
1740 POKE SO+4,64'CGWG
1750 NEXT X'BBRF
1760 RETURN'BAQG
1790 PRINT"[CLEAR]":POKE 53281,0
     :POKE 53280,0:CO=54272'EYOR
1800 SO=CO:FOR X=0 TO 23:POKE SO+X,0
     :NEXT:POKE SO+2,255:POKE SO+5,9
     :POKE SO+24,15'NNIS
1810 FOR X=1 TO 33:READ N1(X),N2(X)
     :NEXT'FRQI
1820 FOR X=1 TO 20:READ S(X):T(X)=S(X)
     :NEXT'GTGL
1830 REM CARD DESIGNS 1-9'BOBI
1840 B$(1,1)="[WHITE] [SHFT N,CMDR J]"
     :B$(1,2)="[DOWN,SHFT N] [CMDR J]"
     :REM SAILBOAT'DYKP
1850 B$(1,3)="[DOWN2,CMDR Y2,CMDR J]"
     :B$(1,4)="[DOWN3,RED,CMDR *,RVS]
     [RVOFF,SHFT POUND]"'CPTP
1860 B$(2,1)="[SPACE3]"
     :B$(2,2)="[DOWN] [BLUE]( "
     :REM BIRD'DUOO
1870 B$(2,3)="[DOWN2]<[RVS] [RVOFF]="
     :B$(2,4)="[DOWN3] ( "'CPTO
1880 B$(3,1)="[SPACE3]"
     :B$(3,2)="[DOWN] [WHITE,SHFT Q] "
     :REM GIRL'DUVQ
1890 B$(3,3)="[DOWN2,SHFT N,RED,
     CMDR +,WHITE,SHFT M]"
     :B$(3,4)="[DOWN3,CMDR M] [CMDR G]
     "'CPNS
1900 B$(4,1)="[GRAY1,RVS,CMDR D,WHITE,
     SHFT POUND,CMDR *,RVOFF]"
     :B$(4,2)="[DOWN,GRAY1,RVS,CMDR L,
     WHITE,SPACE2,RVOFF]"
     :REM SPACESHIP'DAPP
1910 B$(4,3)="[DOWN2,GRAY1,RVS,CMDR L,
     WHITE,SPACE2,RVOFF]"
     :B$(4,4)="[DOWN3,GRAY1,RVS,
     CMDR L,RVOFF,WHITE,SHFT B2]"'CPNN
1920 B$(5,1)="[WHITE,SHFT Y,SHFT T] "
     :B$(5,2)="[DOWN]()[CMDR D]"
     :REM RABBIT'DWVN
1930 B$(5,3)="[DOWN2,RVS,CMDR K]
     [RVOFF,CMDR K]":B$(5,4)="[DOWN3,
     CMDR U] [CMDR U]"'CPLN
1940 B$(6,1)="[GREEN,RVS,SHFT POUND],
     [CMDR *,RVOFF]":B$(6,2)="[DOWN,
```

```
      RVS],,,[RVOFF]":REM TREE'DUBP
1950 B$(6,3)="[DOWN2,CMDR *,RVS],
      [RVOFF,SHFT POUND]"
      :B$(6,4)="[DOWN3] [RVS,BROWN]
      [RVOFF] "'CPFP
1960 B$(7,1)="[SPACE3]"
      :B$(7,2)="[DOWN,BLUE]X[RED]O
      [BLUE]X":REM TIC-TAC-TOE'DCVR
1970 B$(7,3)="[DOWN2,RED]O[BLUE]X[RED]
      O":B$(7,4)="[DOWN3,BLUE]X[RED]O
      [BLUE]X"'CPHQ
1980 B$(8,1)="[SPACE3]"
      :B$(8,2)="[DOWN,BROWN,RVS,CMDR F,
      CMDR J] [RVOFF]":REM TRUCK'DVXT
1990 B$(8,3)="[DOWN2,RVS,CMDR H,
      SPACE2,RVOFF]":B$(8,4)="[DOWN3,
      SHFT Q] [SHFT Q]"'CPMS
2000 B$(9,1)="[RVS,WHITE]A[SPACE2,
      RVOFF]":B$(9,2)="[DOWN,RVS,
      SHFT A,SPACE2,RVOFF]"
      :REM ACE OF SPADES'DCEF
2010 B$(9,3)="[DOWN2,RVS,SPACE2,
      SHFT A,RVOFF]":B$(9,4)="[DOWN3,
      RVS,SPACE2]A[RVOFF]"'CPUC
2020 S$(1)="[HOME,DOWN3,RIGHT5]"
      :S$(2)=S$(1)+"[UP,RIGHT24]"'DQJF
2030 S$(3)=S$(1)+"[UP,RIGHT12]"
      :S$(4)="[HOME,DOWN9,RIGHT]"'DQNE
2040 S$(5)=S$(4)+"[UP,RIGHT34]"'CKRF
2050 S$(6)=S$(4)+"[DOWN8,RIGHT2]"
      :S$(7)=S$(6)+"[DOWN,RIGHT11]
      "'EVAH
2060 S$(8)=S$(7)+"[DOWN2,RIGHT11]"
      :S$(9)=S$(8)+"[UP5,RIGHT10]"'EVDM
2070 FOR X=1 TO 9:FOR Y=1 TO 4'GHDG
2080 PRINT S$(X);B$(X,Y)'BNKF
2090 NEXT Y,X'BDTE
2110 POKE 214,9:PRINT:PRINT TAB(15)"
      [GRAY3]M E M O R Y"'EKID
2120 PRINT:PRINT TAB(12)"C H A L L E
      N G E"'DEND
2130 POKE 214,19:PRINT:PRINT
      TAB(18)"BY SHARON R. SIEGEL"'ELXH
2170 TI$="000000"'BDCE
2180 FOR X=1 TO 20:POKE T(X),81
      :POKE T(X)+CO,11:NEXT'HXUM
2190 I=2'BCTF
2200 FOR X=1 TO 4:IF I=2 THEN X=2'HIEC
2210 FOR Y=1 TO 20:POKE T(Y)+CO,0'FNQD
2220 IF Y<8 THEN T(Y)=T(Y)+1
      :GOTO 2260'GQOF
2230 IF Y<11 THEN T(Y)=T(Y)+40
      :GOTO 2260'GSHG
2240 IF Y<18 THEN T(Y)=T(Y)-1
      :GOTO 2260'GROH
2250 T(Y)=T(Y)-40'CKNE
2260 POKE T(Y),81:POKE T(Y)+CO,11
      :I=1'EUPJ
2270 IF X=4 THEN T(Y)=S(Y)'EKDI
2280 J=J+1:IF N1(J)=0 THEN J=1'GMGK
2290 POKE SO+1,N1(J):POKE SO,N2(J)
      :POKE SO+4,65'FABN
2300 FOR Z=1 TO 60:NEXT Z'EGVA
2310 POKE SO+4,64'CGWA
2320 NEXT Y,X'BDTA
2330 IF TI$>"000009"THEN RETURN'EDVE
2340 GOTO 2200'BEBC
2510 DATA 27,148,24,146,27,148,30,245,
      32,204,32,204,24,146,24,146'BFAL
2520 DATA 32,204,30,245,32,204,36,208,
      41,83,32,204,24,146,41,83'BDTL
2530 DATA 43,200,32,204,27,148,43,200,
      41,83,32,204,24,146,24,146'BEOM
2540 DATA 27,148,24,146,27,148,30,245,
      32,204,24,146,20,169,16,101,0,
      0'BJIO
2550 DATA 1313,1316,1319,1322,1325,
      1328,1331,1334,1454,1574'BYDO
2560 DATA 1694,1691,1688,1685,1682,
      1679,1676,1673,1553,1433'BYSP
2570 DATA 32,204,200,24,146,100,27,
      148,200,24,146,100'BSAO
2580 DATA 20,169,100,21,227,100,24,
      146,100,16,101,300'BSQP
2590 DATA 1267,1271,1275,1279,1283,
      1287,1291,1295,1299'BTAR
2600 DATA 1467,1471,1475,1479,1483,
      1487,1491,1495,1499'BTSJ
2610 DATA 1667,1671,1675,1679,1683,
      1687,1691,1695,1699'BTLK
2620 DATA 1867,1871,1875,1879,1883,
      1887,1891,1895,1899'BTEL
2630 DATA 0,79,1,99,2,80,40,101,41,
      127,42,103'BKAK
2640 DATA 80,101,81,127,82,103,120,76,
      121,100,122,122'BSBM
```

END

Amiga Software Reviews/Guild of Thieves

Continued from page 38

best friend. Don't think that the list you are shown is absolute, for locked doors and closed gates and doors hide the exits they offer from the computer. Finally, HINT accesses the game's hint interpreter that offers aid in dire emergencies by decoding the clues in the game manual. There is one more tool that must be mentioned—the FUNCTION command. It allows you to define a line of text for each of the ten Amiga function keys—a welcome relief. I assigned EXITS to F1 and adventured happily ever after.

Enough about the tools that help you play the game, let's look at what you get in the package. Besides the disk, you receive a *Guild of Thieves* identification card and standard contract, fixed die and a manual that includes a history of the Kerovnian Guild of Thieves (it also acts as an anti-piracy device), instructions and a long list of hint questions and coded answers. These hints are by far the most useful part of the manual, offering help to those who really need it. Typing in the strange coded answers consisting of letters and numbers takes a few minutes. This method of obtaining hints is the best I've seen since Infocom's InvisiClue books.

I was highly impressed with the extents of the Kerovnian geography. There are many places to go in the game and just as many objects to use, manipulate and steal. Kerovnia is paradise for those who like making maps. The EXITS command, coupled with the implied positioning of the various locations, helps immensely in envisioning Kerovnia as it lies ready to be plundered.

The puzzles in *Guild of Thieves* are not the typical, everyday types you see in most adventures. One very important puzzle involves getting a platinum chalice out of a cage that also houses a grizzly bear. Think about how you might perform such a feat. It's not obvious and requires the use of a few other objects you have to obtain in a sneaky or thoughtful manner.

Now some hints for those truly stuck or those needing a good background of information with which to begin *Guild of Thieves*:

1) Look carefully for treasures. There are things you may not even think of as treasures. Some of the treasures you need to collect are in plain view; others are hidden in some object. Some require access to a special location; others you will chance upon in normal travel.

2) In order to determine whether an object is a treasure that you are supposed to find or not, take it to the Guildmaster or drop it in a night safe and see if your score rises. If you get points for dropping it in a night safe, it is a treasure.

3) The descriptions in *Guild of Thieves* are not very revealing. The game might mention that there is a cabinet in the room, but only by examining it do you find out whether it is important to the adventure or not. Most objects described in the text can be manipulated in some way. Explore everything in *Guild of Thieves*—nothing is obvious.

4) Draw a map of your travels carefully. Sometimes, multiple exits from a location lead to the same place. This is especially true in the woods and the scrub.

5) *Guild of Thieves* is a container-oriented game. In other words, there are a lot of instances in which a useful object is contained inside some other item. An example is the maggot; it is in a closed tub under a bed. Make sure you open everything in your quest.

That should be plenty for you to start in earnest with *The Guild of Thieves*. Remember to have fun with the game and appreciate it for what it is—a solid text/graphic adventure with lots of playability, guaranteed to keep you occupied for 20 or 30 hours in a trip to Kerovnia. ■

Computer Tutor/Dynamic Equations

Continued from page 64

```
140 PRINT:PRINT"DO YOU WANT
    ANOTHER?"'CBVF
150 INPUT"Y OR N";A$'BDBC
160 IF A$="Y"THEN 20'DEFE
170 IF A$="N"THEN END'ECYF
180 GOTO 140'BDEE
190 END'BACE
```

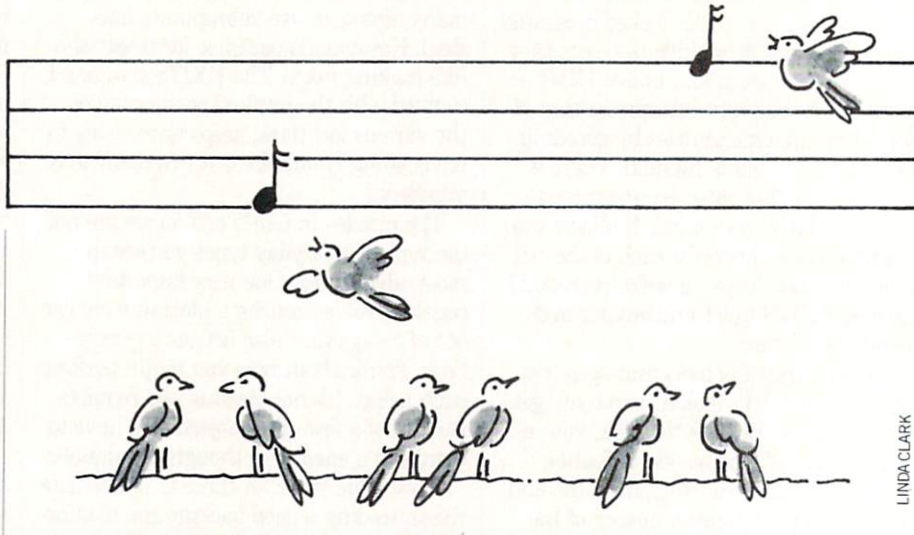
128 Chaos 2

```
5 REM C128 CHAOS#2'BLWG
10 GRAPHIC 1,1:COLOR 0,12:COLOR 1,2
   :COLOR 4,1'EQXD
12 Y=1'BCJA
14 CHAR 1,1,24,"[SPACE4]
   ITERATIVE EQATION F(X)=X(1+R)-RX
   [UP ARROW]2[SPACE4]",0'BJSN
15 R=1.99'BFMD
20 X=.25'BEIY
30 FOR I=1 TO 275'DFNB
40 X=(1+R)*X-(R*X^2)'GLOG
50 NEXT'BAEB
60 FOR I=1 TO 200'DFBE
70 X=(1+R)*X-(R*X^2)'GLOJ
80 DRAW 1,Y,110*X'CIRH
90 NEXT'BAEF
100 R=R+.0035'CHUW
110 Y=Y+1'CDMX
114 IF Y>289 THEN END'EETD
120 GOTO 30'BCKW
```

END

by Jerome E. Reuter

Sequence 128



LINDA CLARK

Sequence is a Commodore 128 game that requires concentration. After typing in the program, save a copy to tape or disk, then run. The first prompt asks if you want to play the game or the piano. The default answer is the game, so press RETURN and you're off. The computer will randomly pick one of eight birds sitting on a perch. The selected bird will leap into the air, sound his voice and return to his perch. Now the computer will wait for you to sound the correct bird, by pressing the correct number key. After the correct key is pressed, the computer goes back into its loop and sounds the first bird, and then adds another randomly selected bird. If you get the sequence right again the computer will add a third key press, and so on.

The game is simple to play and is great fun for kids of all ages. the program is DI-Mentioned for an ARRAY of 100 elements, so you will really have your hands full if you think you can remember better than the 128.

If (or when) you press a key out of order, the game stops and gives you the option of hearing the last sequence played correctly or restarting the game.

The colorful animated sprites can be played like a piano also, just select the piano option and play with the number keys or your keypad. If you want to see and hear your masterpieces again, just press the number nine key and the ARRAY will be replayed for you.

The first eight lines of DATA contain the multi-colored SPRITE which is re-READ and recolored for the other seven sprites. You can put your own SPRITE DATA in those lines, and the program will do the rest.

Have fun, and see if you can figure out what the last DATA line does and how it works. ■

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

Sequence 128

```
2 KY$="[SPACE2,CMDR R,LEFT,DOWN,
  SHFT -,LEFT2,DOWN,CMDR R,CMDR E,
  CMDR R,LEFT3,DOWN,SHFT -,LEFT,DOWN,
  CMDR Z,SHFT *,CMDR X,LEFT,UP,SHFT -,
  UP3,RIGHT]"'BDDQ
4 DN$="[DOWN24]"'BDAF
6 SC=0:HS=0:L=0:N=0:X=0'FQQL
8 COLOR 0,13:COLOR 4,13:COLOR 5,1'DNML
10 DIM A1(100):FOR X=1 TO 8:SPRITE X,0
   :MOVSPR X,0 #0:NEXT X'HAWG
12 IF PEEK(215)=128 THEN PRINT"PLEASE
   SWITCH TO 40 COLUMN":END'GJPL
14 PRINT"[CLEAR,DOWN6]LOADING SPRITES
   - PLEASE WAIT":SLEEP 1:FAST'DFON
16 FOR SP=3584 TO 4095 STEP 64'EMAI
18 FOR A=0 TO 63'DEBH
20 READ D:POKE SP+A,D'DHDB
22 NEXT A:RESTORE:NEXT SP'DFGC
24 SLOW:GOSUB 132:GOSUB 136'DJAF
26 INPUT"[HOME,DOWN4,SPACE2,RVS]G
   [RVOFF]AME OR [RVS]P[RVOFF]IANO
   [SPACE4,RIGHT4]G[LEFT3]";A$'BDCN
28 PRINT"[HOME,DOWN4,SPACE34]"'BAWL
30 IF A$="G"THEN GOSUB 136
   :GOTO 56'FIED
32 CHAR 1,0,2,"[SPACE4]
   KEY 9 = PLAY BACK[SPACE12]"'BGQJ
34 CHAR 1,15,22,"[SPACE9]"'BIBG
36 COLOR 4,14:J=1:GOSUB 148'DLSJ
38 GET KEY A$:X=ASC(A$)-48
   :A1(J)=X'GRNP
40 IF (X<1 OR X>9)THEN 38'FICF
42 IF (X<9 AND X>0) THEN SPRITE X,1,X,
   0,0,1,1:MOVSPR X,(X*40)-6,100
   :ELSE 48'KMRQ
44 ON X GOSUB 110,112,114,116,118,120,
   122,124,48'CKNL
46 J=J+1:GOTO 38'DGDJ
48 FOR L=1 TO J:X=A1(L)
   :REM KEY 9 PRESSED PLAY BACK
   ARRAY'FKIU
50 IF (X>0 AND X<9)THEN SPRITE X,1,X,
   0,0,1,1:MOVSPR X,(X*40)-6,100'JJTO
52 ON X GOSUB 110,112,114,116,118,120,
   122,124'CHLK
54 IF L<J THEN NEXT L:ELSE 26'FGQJ
56 CHAR 1,0,2,"[SPACE36]"
   :REM START COMPUTERS LOOP'CABT
58 GOSUB 148:N=0:GOSUB 138:N=1'ENWO
60 CHAR 1,1,4,"[SPACE24]"'BGYG
62 SLEEP 1:CHAR 1,15,22,"[SPACE2]
   MY TURN[SPACE2]"'CLDK
64 COLOR 4,12:POKE 2592,0'CLSJ
66 FOR DL=1 TO 250:NEXT DL'EJWM
68 FOR L=1 TO N'DDLM
70 IF A1(L)=0 THEN A1(L)=INT(RND(.)*8)
   +1'ISBL
72 X=A1(L)'BGZH
74 SPRITE X,1,X,0,0,1,1'BOAK
76 MOVSPR X,(X*40)-6,100'DNWN
78 ON X GOSUB 110,112,114,116,118,120,
   122,124'CHLS
80 IF L<N THEN FOR DL=1 TO 100:NEXT DL
```

```
    :NEXT L'INBL
 82 SLEEP 1:REM START HUMANOIDS
    LOOP'CVON
 84 CHAR 1,15,22,"YOUR TURN"'BIFN
 86 COLOR 4,16'BEXL
 88 POKE 2592,10'BHUN
 90 FOR L=1 TO N'DDLH
 92 GET KEY A$'CCEI
 94 X=ASC(A$)-48'DHGM
 96 IF (X<1 OR X=>9) THEN 158'GJBR
 98 SPRITE X,1,X,0,0,1,1'BOAQ
100 MOVSPR X,(X*40)-6,100'DNWY
102 ON X GOSUB 110,112,114,116,118,
    120,122,124'CHLE
104 IF X<>A1(L) THEN 158'EJED
106 GOSUB 138'BDPC
108 IF L<N THEN NEXT L:ELSE N=N+1
    :GOTO 62'IKAK
110 SOUND 1,47000,30,2,42000,4750,1,
    3168:GOTO 126'CJSD
112 SOUND 1,37000,30,2,21000,14750,0,
    528:GOTO 126'CJLF
114 SOUND 1,37000,30,2,32000,100,1,
    1518:GOTO 126'CIAH
116 SOUND 1,59000,30,2,42000,13250,1,
    1914:GOTO 126'CKFK
118 SOUND 1,37000,30,2,19000,15250,0,
    726:GOTO 126'CJOL
120 SOUND 1,27000,30,2,21000,14567,1,
    1500:GOTO 126'CKAF
122 SOUND 1,33000,30,2,18000,17000,1,
    1575:GOTO 126'CKAH
124 SOUND 1,30000,30,2,17000,18000,1,
    1000'BGTH
126 FOR DL=1 TO 125:NEXT DL'EJXH
128 SPRITE X,1,X,0,0,0,1'BOYI
130 GOSUB 148:RETURN'CEQY
132 PRINT"[CLEAR]";:PRINT LEFT$(DN$,
    16);:FOR X=1 TO 8:PRINT KY$;
    :NEXT X'IWWK
134 PRINT"[DOWN2,RIGHT2]1[RIGHT4]2
    [RIGHT4]3[RIGHT4]4[RIGHT4]5
    [RIGHT4]6[RIGHT4]7[RIGHT4]8"
    :RETURN'CBXI
136 FOR T=1 TO 100:A1(T)=0:NEXT T
    :RETURN'GPWK
138 SC=N:IF HS<SC THEN HS=SC'FMAM
140 IF HS<SC THEN HS=SC'EIXD
142 PRINT"[HOME,BLACK,DOWN2,RIGHT4]
    SCORE:";SC;'BEEF
144 PRINT TAB(15)"[SPACE2]HIGH SCORE
    :";HS:RETURN'DHSJ
146 RETURN'BAQF
148 FOR T=1 TO 8'DDWJ
150 SPRITE T,1,T,0,0,0,1'BOQD
152 MOVSPR T,(T*40)-6,160'DNUG
154 NEXT T:RETURN'CCHF
156 RETURN'BAQG
158 CHAR 1,3,4," WRONG KEY[SPACE14]
    "'BGVO
160 SLEEP 1'BCHC
162 INPUT"[BELL,HOME,DOWN4,RVS]R
    [RVOFF]E-START / [RVS]L[RVOFF]
    AST SEQ[RIGHT4]R[LEFT3]";A$'BDXN
164 IF A$="R" THEN SC=0:L=0:N=0
    :GOSUB 138:GOTO 26'ISPO
166 IF A$="L"THEN CHAR 1,0,4,
    "LAST SEQUENCE[SPACE22]"
    :ELSE END'GJAT
168 FOR L=1 TO N:X=A1(L)'EKTN
170 SPRITE X,1,X,0,0,1,1'BOAF
172 MOVSPR X,(X*40)-6,100'DNWI
174 ON X GOSUB 110,112,114,116,118,
    120,122,124'CHLN
176 IF L<N THEN NEXT L'EDBL
178 INPUT"[BELL,HOME,DOWN4,RVS]R
    [RVOFF]ESTART OR [RVS]E[RVOFF]ND
    [RIGHT4]R[LEFT3]";A$'BDLT
180 IF A$="E"THEN FOR X=1 TO 8
    :MOVSPR X,X*43 #X:NEXT X
    :PRINT"[CLEAR]":END'LSEP
182 SC=0:L=0:N=0:GOSUB 136:GOSUB 138
    :GOTO 26'GUGN
184 DATA 0,40,0,195,170,0,255,170'BYWM
186 DATA 128,15,150,160,0,134,168,
    0'BBXO
188 DATA 150,170,15,170,128,255,170,
    0'BDAQ
190 DATA 195,170,0,0,40,0,0,60'BVTI
192 DATA 0,0,40,0,20,40,64,85'BUVK
194 DATA 169,80,86,169,84,86,170,
    85'BBVN
196 DATA 22,170,85,5,170,149,1,
    106'BAHP
198 DATA 169,3,207,0,3,12,0,0'BUWQ
200 DATA 10,5,18,5,21,20,5,18'BUCA
```

END

by Mark Jordan

The 128 Mode

Mouskataar

Explore the Commodore 128 in its powerful native mode. Some of the articles in this column may be technical, some not so technical—but we guarantee that they will spark your creativity.

I finally bought a 1351 mouse for my 128. When I got it I was surprised to find a 20-page manual with it. "Wow!" I thought, "everything I ever wanted to know about my mouse . . . but didn't know to ask."

Was I ever in for a surprise. I read the manual once, read it twice, and still didn't know how to program the durn little upside-down trackball.

Having been initiated to mouse programming on the Amiga mouse, I have to admit I was a bit frustrated with my 1351. Oh sure, I could study the machine language source code that is cryptically included in the manual. But I wasn't in the mood (never am) to analyze somebody else's machine code. So the only thing left for me to do was what I always do when I want to learn something about my 128—write a program using the new concept.

Mousekataar is the result. It is a music program that you may find very unusual. For one thing, you will need to learn how to play music by moving the mouse—not as easy as it sounds. And you will also need to discover how to chord as you play. To the uninitiated, that may sound really intimidating.

It isn't. Mousekataar is fun. Here's how to use it:

First, type it in using the magazine entry program, save it before using, and plug George (my nickname for the 1351) into port 1. Second, place the disk that came with your mouse in the drive and type: BLOAD "MOUSE128.BIN" and press RETURN. Now replace the Mousekataar disk and type:

BSAVE "MOUSE 128.BIN",B0,
P6144 TO P6279

and press RETURN. You have just saved the mouse reader onto your disk.

Third, run Mousekataar.

Fourth, grab George. Move him around on the grid in the center of the screen. Listen to the effects.

Fifth, pay attention. The grid you see in the center of the screen is a series of 30 rows divided into three columns. Each row represents a half step up (or down) the scale. Think of the lines as frets, incremented the same way a guitar is. By moving your mouse up and down strategically, you can play a tune without any practice.

But there's more. If you move your 1351 over to the word "Chords" on the upper left side of the screen and click the right button, when you return to the fret area you'll discover that you will be playing more than notes, you'll be playing background chords along with your melody.

Music Theory in Five Minutes

All songs have a melody . . . that's the part you hum or sing when you're in the shower. Songs also have an underlying harmony. If there are two of you (maybe not in the shower), one of you may decide to sing another part that magically matches the melody. It isn't the melody—it's *other* notes. Some people are good at harmonizing, some aren't.

Now whether you're good at harmonizing or not, the fact is that there is this underlying structure of music, and all songs have it. Guitar players think of the harmony simply as chords. Even the greenest of guitar players can tell you that there are three main chords to every song.

Well, enough of all that. What matters here is that your three columns on the screen allow you to use the three main chords. When your mouse is in the center column, the main chord (called the tonic) plays. Move your mouse to the left column and the second most important chord in a song (called the dominant) will play. Move your mouse to the right and you'll hear the last member of the three-chord cluster (the subdominant).

So what you need to do is move your mouse left/right for chords and up/down for melody. Got it? You'll never know until you try.

Practice with a folk tune like "Red River Valley." Begin by shutting off the chords (go back to "Chords" and click the right button). Practice the melody so you've got it pretty well.

Okay. Click "Chords" again and try it with harmony. By fiddling you'll quickly discover that the song needs just six total chord changes: start center, go left, go center, go right, go center, go left, and finish center. Here's when to make them:

Come and sit by my side if you love me,
Do not hasten to bid us adieu *(go left on second syllable)*,
But re-*(back to center)*-member the Red River *(to the right)* Valley,
And the *(to center)* dear one who *(to the left)* loved you so true. *(finish on center)*

Of course, learning to play any new instrument is a challenge, and Mousekataar is no different. So practice.

There are several other options available within the program. You can change the waveform type: sawtooth, triangle or pulse. Simply click (right button) on the one you choose (upper left of screen).

There's another choice in the upper-left quadrant of your screen— "Slider." When you first run the program it's in "step" mode. That means your mouse pointer will have to move all the way from one row to the next before the note will change. In other words, each note you play is a true half-step on the scale.

If you click "Slider" you will toggle on a mode which allows you to slide from one note up or down to the next. It's more like playing a fret-less instrument such as a violin. This mode has a novel effect but it is much harder to control. To go back to the step mode, click "Slider" again.

Finally, the two mouse buttons have special functions. The left button will "bend" notes. Just press it and observe the results. The note playing will slide up, much the same as happens when a guitar player pushes on a string as he presses it down. The right button will cause the melody note to stop playing. This is especially useful if you must repeat a note. If you had no way to stop it, the repeating notes would sound like just one long note.

How to Program Your Mouse

Contrary to my original impression, programming the 1351 is not hard. It is also not completely easy. You just need to understand a few things about it.

The simplest way to read the mouse is to plug it into port 1 and use the following line:

X = POT(1) AND 127: Y = POT(2)
AND 127

The only problem with this is you will be limited to reading only 127 plot points horizontally or vertically.

The next easiest alternative is to simply

steal the routine that came with the mouse. That's what we did with Mousekataar (though it is modified to create the animated effect). This routine will constantly move sprite #1 whenever the mouse is moved (it's interrupt driven). Thus sprite #1 must be your pointer.

Now if you ever need to know what the mouse coordinates are, simply check with the RSSPOS(x,x) function. To find the X (horizontal) coordinate, type it this way: X = RSPPOS(1,0). To find the Y (vertical) coordinate, type this: Y = RSPPOS(1,1).

Keep in mind that the result for X can be any number from 0-511 because that's how far a sprite can travel horizontally, and Y can be anything from 0-255 because that's a sprite's vertical limit.

To see if either button is pressed, simply read JOY(1). If the result is a value of 128, then the left button has been pressed. If it's equal to 1, then the right button has been pressed. Line 410 in Mousekataar checks if either button has been pressed and jumps to the subroutine at 460 to decide which button and what to do about it.

You may be wondering what the short listing is all about. It's simply a demo of how one might use the mouse to move the cursor in the 80-column mode. Read the accompanying sidebar for more detail.

I bought my mouse because I am planning to do an extensive review of GEOS 128. Having used both the Amiga and the Macintosh, I knew the need for a mouse when doing serious on-screen artwork. Once I got the little critter, I became enchanted with it as a programming tool. Mousekataar is just the first of many future projects for this versatile addition to the Commodore family.

80-Column Mouse Demo Explanation

10 — Loads the ML routine that reads the mouse and sets key 8 for back arrow. This is handy because when the left mouse button is pressed, what key 8 is defined as will be input into the keypress buffer.

20 — Dims three variables, X(), Y() and C(). The subscripts for X() and Y() will be the X and Y values of sprite #1. You'll see how in line 50. C() is an array that allows for color changes.

30 — Reads the C() array.

40 — The data for above.

50 — This FOR/NEXT loop calculates a value between 0 and 79 for X() and a value between 0 and 24 for Y(). What is happening here is that the 0-511 potential of our mouse pointer must be translated into a 0-79 format for the 80-column screen. Likewise, the 0-255 potential of our mouse pointer gets translated into a 0-24 value. We've simply rescaled the sprite coordinates into a 80 x 25 line grid.

60 — This line simply prints a color bar on the top of the screen to allow us to change colors with the mouse.

70 — This system call (SYS 52591) took me a while to discover. It turns the cursor on during program execution.

80 — This system call (SYS 6144) turns on the mouse routine that we borrowed from the disk that came with the mouse.

90 — We begin the loop. First, we print the cursor at the converted X and Y coordinates of the mouse. (Reread info on line 50.)

100 — The only reason this line is included is to see if the left button was pressed and to demonstrate a unique feature of the mouse routine we are using. In line 10 we defined key 8 as back arrow. If the mouse button gets pressed, this back arrow is stuffed into the keypress buffer. A simple GET A$ will read it and then act on it. In this case, we'll simply jump down to 120 and use a routine that prints the word "Here" on the screen at the cursor.

110 — Finish the loop

120 — Print "Here" at the cursor which the mouse controls) as long as the cursor isn't on the color bar.

130 — If the cursor is on the color bar, we use RSPPOS(1,0) to calculate where it is.

140 — With that calculated, we choose the correct color and print it (recall that C$() holds the sixteen colors). ■

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

Mousekataar

```
10 FAST:PRINT"[CLEAR]":GRAPHIC 1,1
   :COLOR 4,1'EKAC
20 BLOAD"MOUSE128.BIN"'BBTC
30 FOR I=0 TO 1:FOR T=0 TO 63
   :IF T<44 THEN READ A$
   :ELSE A$="0"'MRGK
40 POKE 3584+T+(I*64),DEC(A$):NEXT
   :NEXT'HRMH
50 FOR T=6279 TO 6308:READ A$
   :POKE T,DEC(A$):NEXT'HUQJ
60 POKE 6285,15:POKE 6234,76
   :POKE 6235,135:POKE 6236,24'EHIK
70 DIM CH(320,1),N(275)'BQNG
80 FOR T=106 TO 151:CH(T,0)=1607
   :CH(T,1)=2408:NEXT'GHLO
90 FOR T=152 TO 198:CH(T,0)=2145
   :CH(T,1)=3215:NEXT'GHSP
100 FOR T=199 TO 245:CH(T,0)=2864
   :CH(T,1)=4291:NEXT'GHKF
110 N(0)=2864:M=1.0596'CQRA
120 FOR T=6 TO 246 STEP 6:S=N(T-6)
   :N(T)=INT(S*M):SS=N(T)-S
   :SS=INT(SS/5)'ONTP
130 FOR I=1 TO 5:N(T+I)=N(T+I-1)+SS
   :NEXT'JSMI
140 NEXT'BAEY
150 SPRITE 1,1,1'BGOB
160 GRAPHIC 1,1'BDHC
170 SLOW:FOR T=0 TO 24:COLOR 1,7
   :CHAR 1,13,T,"[SPACE5]",1
   :COLOR 1,15:CHAR 1,18,T,"[SPACE5]
   ",1:COLOR 1,7:CHAR 1,23,T,"
   [SPACE5]",1:NEXT'LALW
180 COLOR 0,16:BOX 0,107,2,220,
   194'CUKI
190 FOR T=8 TO 193 STEP 6
   :DRAW 0,107,T TO 220,T'GTQM
200 READ A:IF A>0 THEN BOX 0,162,T+2,
   164,T+4'HTWE
210 NEXT:COLOR 1,1'CEXY
220 FOR T=20 TO 164 STEP 72
   :DRAW 1,95,T TO 103,T
   :DRAW 1,224,T TO 232,T:NEXT'JJCL
230 FOR T=2 TO 20 STEP 9
   :CHAR 1,11,T,"C":CHAR 1,29,T,"C"
   :NEXT'HWWI
240 CHAR 1,14,24,"DOM TONIC SUB",
   1'BKDG
250 COLOR 1,2:CHAR 1,0,0,"SAWTOOTH",
   1'CMFH
```

```
260 COLOR 1,1:CHAR 1,Ø,1,"TRIANGLE",
    1'CMUI
270 COLOR 1,2:CHAR 1,Ø,2,"PULSE
    [SPACE3]",1'CMQI
280 COLOR 1,1:CHAR 1,Ø,3,"SLIDER
    [SPACE2]",1'CMNK
290 COLOR 1,2:CHAR 1,Ø,4,"CHORDS
    [SPACE2]",1'CMPL
300 SYS DEC("1800"):KEY 8,""'DFKB
310 IN=1:CH=1:SI=54272:WF=33
    :FOR T=Ø TO 24:POKE SI+T,Ø:NEXT
    :POKE SI+24,15'MPQP
320 FOR T=Ø TO 2Ø STEP 7:POKE SI+T+2,Ø
    :POKE SI+T+3,8:POKE SI+T+5,112
    :NEXT'OECO
330 POKE SI+6,24Ø:POKE SI+13,128
    :POKE SI+2Ø,64'GYMJ
340 GOSUB 55Ø'BDNC
360 DO:Y=255-RSPPOS(1,1)
    :IF IN THEN Y=INT((Y+6)/6)*6'LXOP
370 Q=N(Y):Z=Y'CIDH
380 Y=Q/256:X=Q AND 255'ELIK
390 C=RSPPOS(1,Ø)AND 255
    :IF C<1Ø6 THEN X=Ø:Y=Ø'IUCP
400 POKE SI,X:POKE SI+1,Y'DKGC
410 IF JOY(1)THEN GOSUB 46Ø
    :GOTO 38Ø'FKIE
420 POKE SI+7,CH(C,Ø)AND 255
    :POKE SI+8,CH(C,Ø)/256'GETK
430 POKE SI+14,CH(C,1)AND 255
    :POKE SI+15,CH(C,1)/256'GGNL
440 LOOP'BAKC
460 IF JOY(1)=128 THEN Q=Q*1.ØØ4
    :RETURN'HONL
470 POKE SI+4,WF-1'DHGI
480 IF RSPPOS(1,Ø)<8Ø THEN BEGIN
    :Y=RSPPOS(1,1)'HRLO
490 IF Y<9Ø AND Y>81 THEN
    CH=(CH+1)AND 1:GOTO 54Ø'JSXQ
500 IF Y<82 AND Y>73 THEN
    IN=(IN+1)AND 1:GOTO 54Ø'JSTJ
510 IF Y<74 THEN WF=65'EHXE
520 IF Y<66 THEN WF=33'EHTF
530 IF Y<58 THEN WF=17'EHWG
540 BEND'BBXE
550 DO:LOOP UNTIL JOY(1)=Ø'FFNJ
560 POKE SI+4,WF:POKE SI+11,WF-CH
    :POKE SI+18,WF-CH'IBIQ
570 RETURN'BAQG
580 DATA ØØ,7Ø,ØØ,ØØ,78,ØØ,ØØ,54'BXNL
590 DATA ØØ,ØØ,7C,ØØ,ØØ,3E,ØØ,ØØ'BXHM
600 DATA 7E,ØØ,ØØ,7F,ØØ,ØØ,7F,ØØ'BXNF
610 DATA ØØ,7F,ØØ,ØØ,7E,ØØ,ØØ,3C'BXGG
620 DATA ØØ,ØØ,Ø8,ØØ,ØØ,Ø8,ØØ,ØØ'BXXG
630 DATA Ø4,8Ø,ØØ,Ø3'BLYF
640 DATA ØØ,1C,ØØ,ØØ,3C,ØØ,ØØ,54'BXII
650 DATA ØØ,ØØ,7C,ØØ,ØØ,F8,ØØ,ØØ'BXNJ
660 DATA FC,ØØ,Ø1,FC,ØØ,Ø1,FC,ØØ'BXBL
670 DATA Ø1,FC,ØØ,ØØ,FC,ØØ,ØØ,78'BXZM
680 DATA ØØ,ØØ,2Ø,ØØ,ØØ,2Ø,ØØ,Ø2'BXNM
690 DATA 4Ø,ØØ,Ø1,8Ø'BLWL
700 DATA CE,EF,18,DØ,16,A9,ØF,8D'BXVG
710 DATA EF,18,AD,F8,1F,C9,38,FØ'BXEH
720 DATA Ø5,A9,38,4C,9F,18,A9,39'BXTI
730 DATA 8D,F8,1F,6C,FØ,18'BROI
740 DATA 1,,1,1,,1,,1,,1,1,,1,,1,1,,1,
    ,1,,1,1,,1,,1,1,,1,'BXDO
```

END

80-Column Mouse

```
10 BLOAD"MOUSE128.BIN":KEY 8,"
   [BACK ARROW]"'CEKD
20 DIM X(255),Y(255),C$(15)'BUJC
30 FOR T=Ø TO 15:READ C$(T):NEXT'FLXE
40 DATA "[BLACK]","[WHITE]","[RED]","
   [CYAN]","[PURPLE]","[GREEN]","
   [BLUE]","[YELLOW]","[ORANGE]","
   [BROWN]","[L. RED]","[GRAY1]","
   [GRAY2]","[L. GREEN]","[L. BLUE]",
   "[GRAY3]"'BPVK
50 FOR T=Ø TO 255:X(T)=INT(T/3.1876)
   :Y(T)=INT(T/1Ø.21):NEXT'KINO
60 PRINT"[CLEAR,RVS,BLACK,SPACE5,
   WHITE,SPACE5,RED,SPACE5,CYAN,
   SPACE5,PURPLE,SPACE5,GREEN,SPACE5,
   BLUE,SPACE5,YELLOW,SPACE5,ORANGE,
   SPACE5,BROWN,SPACE5,L. RED,SPACE5,
   GRAY1,SPACE5,GRAY2,SPACE5,L. GREEN,
   SPACE5,L. BLUE,SPACE5,GRAY3,SPACE5]
   "CHR$(27)"M"'CEMW
70 SYS 52591:REM TURN CURSOR ON IN
   PROGRAM MODE'CGFN
80 SYS 6144 :REM TURN MOUSE MODE
   ON'CUBK
90 DO:CHAR,X(RSPPOS(1,Ø)AND 255),
   Y(RSPPOS(1,1)),CHR$(1)'GDKO
100 GET A$:IF A$="[BACK ARROW]
    "THEN GOSUB 12Ø'FIJA
110 LOOP'BAKV
120 IF RSPPOS(1,1)>1Ø THEN PRINT"[RVS,
    SHFT H]ERE";:RETURN'GKAE
130 X=X(RSPPOS(1,Ø)AND 255)/5'EOTD
140 PRINT C$(X);:RETURN'CHVB
```

END



GORDON KIBBEE

Weekly Budget Planner

for the Commodore 64 and 128

by Rolf L. Miller

Weekly income usually means bills are paid weekly. It makes sense, then to format budget planning on a weekly basis. If a spreadsheet or budget program is not possessed which will allow such, try this program.

	Week1	Week2	Week3	Week4	Week5
Net Income					
Salary	300	300	300	300	300
Other	0	50	0	50	0
*Forward	0	124	180	330	0
Total In	300	474	480	680	300
Expense					
Church	35	40	35	40	35
Rent	0	0	0	575	0
Food	45	45	45	45	45
Phone	0	25	0	0	0
Electric	0	0	50	0	0
Water	20	0	0	0	0
Trash	8	0	0	0	0
Gasoline	10	10	10	10	10
Car Loan	0	133	0	0	0
Car Insur.	0	31	0	0	0
Life Insur.	13	0	0	0	0
Bank Card	25	0	0	0	0
Store Card	10	0	0	0	0
Savings	10	10	10	10	10
Total Exp	176	294	150	680	100
***Balance**	124	180	330	0	200

Programs to accomplish specific personal tasks do not have to be long or complex. This is particularly true with the 64, because the built-in screen editor allows easy editing of program text. Thus, the program itself can be used instead of input routines to enter and revise information. And since the information will be saved with the program, file writing and reading routines are not needed either. This program utilizes data statements and two numeric variables to hold the information which would otherwise be input.

In typing the program, spacing of string text is critical to display format. In every case one space is used between words. In line 50 S$ is made to equal 30 spaces. L$ is made to equal 40 minus sign characters. In line 100 W$ begins with the CLR/HOME character followed by 11 spaces. In line 200 E$ begins with three spaces. The text assignments in lines 410, 420 and 430 are each preceded and followed by one space.

To use the weekly budget planner, under NET INCOME in line 110, make a data line for each item of income. There is no limit. Identify its source with text, which must be followed by five values to indicate the net amount received each week. If none is received in a particular week, put zero. The program truncates data text to ten characters and shows only whole numbers. Then count the number of income data lines and make ID in line 200 equal to the count.

Following that, under EXPENSE in line 200, likewise make a data line for each expense item. Weekly expenses should show an amount for each week. Monthly expenditures are placed in the week they are to be paid, the other weeks showing zeros. Of course, since most months do not have five weeks, no monthly expenses should be planned in that week. Then count the number of expense data lines and make ED in line 400 equal the count.

Save the program before running it the first time. When run, the program utilizes a string array to format the display. As data is read, strings are created according to the data's order of appearance in display. At the same time, values are totalled in a numeric array. After the reading is complete, the totalled values calculated and formatted into the string array in their proper order. It takes a moment, then up to 23 lines of the planner is displayed. Pressing any key will scroll up any remaining lines.

But before doing that, look at the line labeled *FORWARD. The amounts shown are the previous week's balance. WEEK1 is zero because previous months are not carried over. A negative value displayed in any week tells that the planned expenditures in the previous week exceed the income for that week. Therefore, expenses for that week should be examined to see which ones can be reduced or moved to another week to achieve a balanced situation.

When all lines have been scrolled onto the screen, four options are presented. Keying zero and pressing RETURN will stop the program to allow listing for making changes. RUN to restart. Entering 1 will redisplay the planner. Entering 2 will save it to tape. Line 510 can be made to use disk by changing it to read:

OPEN 15,8,15,"S0:BUDGET":CLOSE 15:SAVE"BUDGET",8 Of course, a name other than BUDGET can be used. Entering 3 will print it out. ■

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

Weekly Budget Planner

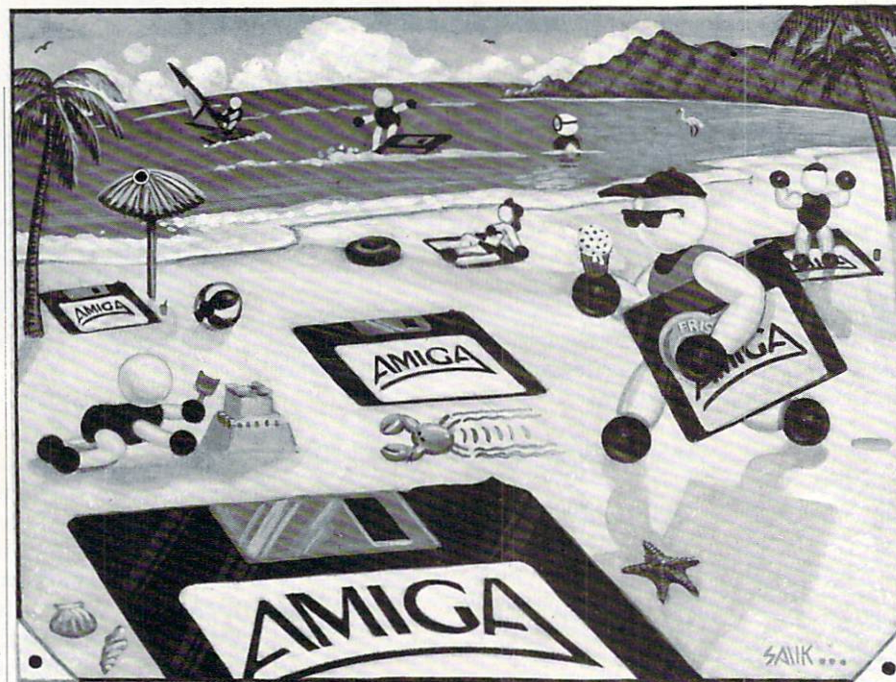
```
10 GOTO 50'BCMW
20 A$(Y)=A$(Y)+RIGHT$(S$+STR$(D%),6)
   :RETURN'GVRG
30 FOR Y=S TO F:READ D$
   :A$(Y)=LEFT$(D$+S$,10):FOR X=0 TO 4
   :READ D%'LDTM
40 A%(E,X)=A%(E,X)+D%:GOSUB 20:NEXT
   :NEXT:RETURN'GWUI
```

Continued on page 128

by Graham Kinsey

Amiga Public Domain Update

What's new for the Amiga in the public domain? Here are some of the more recent PD programs for the Amiga.



ED SAUK

This month I have reviewed programs from Fish disks 111-118, plus a bunch of other programs. I'll also finish reviewing the entries in the BADGE (Bay Area Amiga Developers Group) Killer Demo Contest this month. The best demo program this month is DemoReel1, better known as "The NewTek Demo" to many of you. Two great games are also included: GravAttack and BattleMech, plus an improved archive file extractor.

For each program, the author is given when it is known, and if that program is available on the Fish series or the AMICUS series of public domain disks, the number of each series is given before the description. Virtually all of the programs mentioned in this column are available for download in the libraries of People-Link's AmigaZone. When a public domain program has been classified as shareware, this is also mentioned, with the suggested amount.

Amyload: by Jeff Kelley (Fish 111)

Amyload is another program that will tell you the Amiga's current task load in terms of CPU usage. In addition to CPU usage, Amyload can also monitor blitter usage or FAST and/or CHIP memory usage. Amyload uses a bar graph to display usage information. The program's many options include regulating how fast the graph is updated, what scale is used to measure time (i.e., the X-axis), task priority, window size and pen and background color.

PopLife: by Olaf Seibert (Fish 111)

Another version of the venerable graphics program Life. Unlike most other versions, PopLife will use the standard Workbench screen as its universe. It will even use any window gadgets, borders and drag bars as part of the starting life already in the universe before any generations are calculated.

BeachBirds: by Jerrold Tunnell (Fish 112)

This demo uses animation and digitized sounds to faithfully reproduce a beach scene. BeachBirds was one of the entries in the BADGE Killer Demo contest.

Bully: by Mike Meyer (Fish 112)

This program allows you to easily show off the Amiga's multitasking capabilities by showing several graphics demos running at once. Once all the demos have been loaded, Bully will slide up and down every screen which is part of a demo. This means that several screens will be viewable at once.

WaveBench: by Bryce Nesbitt (Fish 112)

A graphics display hack that gives "perpetual motion" to your Workbench screen. This was one of the entries in the BADGE Killer Demo contest.

NoIconPos: by Markus Schaub (Fish 113)

This program will clear the position of any Workbench icon that might have been saved previously. This is obviously very useful for Workbench users and for people who create Workbench environments for others.

CDecl: by Graham Ross (Fish 114)

If complex C statements like "long *(*(*foo)())[10]" keep you from using the language, this program will allow you to write such statements in English terms, and then CDecl will convert your English statements into C statements.

Killer: by Robert Wilt (Fish 115)

Here is a fantastic graphics/sound demo that has the flavor of a commercial. You will especially love this demo if you like the Beatles or demos that put down rival computers. This demo requires one megabyte to run, and was one of the winning entries in the BADGE Killer Demo contest.

AMUC Demo: by Stephen Vermulen and Stephen Jeans (Fish 117)

Here is a unique scrolling demo. This demo scrolls a 2400 (that's right, 2400 pixels wide) by 200 pixel picture of the members of AMUC (AMiga Users of Calgary) superimposed on the Calgary skyline.

HAMmmm: by Phil Burk (Fish 118)

This is a strange graphics/sound demo, that consists of a double-buffered HAM screen that produces triangular shapes along with strange sounds. The music for this demo grew out of a piece of music written for the recent celestial event called the "Harmonic Convergence." This demo was one of the winning entries in the BADGE Killer Demo contest.

Lexical: by Jeff Sullivan

Lexical will read any document and give you information concerning it. In addition to telling you such simple things as the number of words and sentences in the document, the average length of each word in terms of syllables and how many

"long words" (i.e., how many words have three or more syllables) are present, Lexical will also perform three separate readability tests. Lexical will run the Gunning-Fog, Flesch and Kincaid tests on each document. You can specify more than one document for Lexical to examine at a time.

PAK version 1.0: by Mark Riley
(Shareware: $10)

PAK is a file archiver similar to ARC. The huge difference with PAK is that the archives that it produces are "self-dissolving." This means that instead of using the archiving program itself to extract the files from an archive, all you have to do from the CLI is type the name of the "PAKed" archive. The archive will then automatically "unPAK" itself, without you having to do anything else! This makes PAK much easier to use for beginning Amiga owners. PAK also can handle file names of any length (unlike ARC, which requires that all file names be no longer than 12 characters). Currently PAK's compression routines are not quite as good as ARC's, however, Mark (who is available on PeopleLink as ID: SONIX) stated that the next version of PAK will surpass ARC in terms of file compression routines.

DGCS: By Forest City Software
(Shareware: $10)

So you never thought that a computer could make planning a trip to the supermarket easier? Well, along comes Deluxe Grocery Construction Set (DGCS for short). DGCS contains 232 grocery items in eight different categories from which to create your shopping list. You can flag any item chosen with a coupon and/or a sale flag. You can then dump the list to your printer when finished.

Funbut: by Brian Moats

If you have a game that requires constant clickings of the left mouse button, this program might save your mouse from undue wear and tear. Funbut will allow you to use the F1 key in place of the left mouse button. Although it was intended for entertainment purposes, there is no reason why you can't use it for more general applications.

Compu-Calc: by Stan Hodge
(Shareware: amount not specified)

Compu-Calc is a window-oriented calculator designed for programmers. In addition to allowing you to use the mouse instead of the keyboard, Compu-Calc's main feature is that it displays all numbers simultaneously in decimal, binary, octal and hexadecimal modes. The users can also input in any one of these four different modes at any time. Compu-Calc presently does not support negative numbers.

DB-Wizard: by J.L. White
(Shareware: $15)

Here is a database program that is primarily designed for mailing lists, but it can be altered for other uses. It has options to print mailing labels or all the information in each record. If you want to use DB-Wizard for databases other than mailing lists, you might want to edit the DB-Wizard IFF picture in order to have a more aesthetically pleasing program.

Dodge: by Mike Scalora

If you ever worry about the white borders of your CLI window burning out your monitor, but you don't like to use a screen blanker, this alternative program might suit you. Dodge will move the Workbench screen a few pixels in one direction, giving some of your monitor's phosphors a needed rest.

Movie version 1.01: by Eric Graham

This is an update to version 1.0 of Eric Graham's Movie program (which was part of the *Sculpt 3-D* animation disk reviewed in the February 1988 installment of this column), which allows *Sculpt 3-D* users to create animations from pictures that were generated with *Sculpt 3-D*. The biggest change in the Movie program is a much better documentation file, which clears up a lot of problems that people were having with the Movie program. Also a bug has been fixed in Movie so that now animations using an odd number of bit-planes won't have glitches in them. Also new are two programs that will automatically generate script for a simple loop animation.

Vacbench: by Randy Jouett

This is a graphics display hack that turns your mouse pointer into a vacuum cleaner.

StealMemBoot: by Alex Livshits

If you have games or other programs that don't work with extended memory, StealMemBoot might help you. StealMemBoot will modify the boot block on the disk. This modification will automatically disable any FAST memory in the system, so that all memory allocations are done using CHIP memory only. Make sure before you perform such an operation that the program does *not* contain a custom boot block, since modifying a custom boot block could trash the program!

DemoReel1: by NewTek, Inc.

If you have been waiting to see the *ultimate* slideshow demo for the Amiga, wait no longer. This is a show-stopping demo put together by NewTek to show off their Amiga products DigiView, *DigiPaint* and *Digi F/X*. There are basically three parts to this demo. The first part is a miniature version of NewTek's famous Maxine Headroom demo. This miniature version runs for about 30 seconds, and although Maxine's image is only 1/20th full size, it still is quite impressive (the sound portion is almost as good as the full version).

The second portion is a slideshow of images created with Newtek's DigiView digitizer and *DigiPaint* HAM paint program. The dazzling DigiView pictures show off DigiView's 640x400 16-color mode. Although 16 colors doesn't sound very impressive, DigiView's dithering routines make these pictures seem just as incredible as the HAM digitized pictures. The slideshow also uses professional transition effects, including checkerboard and rectangle wipes and other transition modes. If this weren't enough, while the slideshow is being presented, an ear-catching digitized song ("ParaNormia," by the group Art of Noise) plays in the background.

The final part of the demo shows off NewTek's soon-to-be-released special-effects program *Digi F/X*. Basically what you see here are four digitized Amiga monitors, which show small "movies" being played, all with digitized sound effects. The movies range from a bunch of metallic monsters rampaging, to a dripping faucet to a scene with the cartoon character Betty Boop. This demo requires a megabyte to run, and takes up 1.8MB of disk space on two floppy disks. Due to the size of the demo, don't expect to see it on any bulletin board or online service (it would take you several hours to download it!).

MFF-Update version 1.02:
by Software Visions

This is the latest update/demo for the graphical database program *MicroFiche Filer* from Software Visions (version 1.0 of MFF-Update was reviewed in last month's column). The important addition is that a text import utility has been added, which will allow you to import ASCII text files into your *MicroFiche Filer* databases. [***Editor's Note:*** *Look for a complete review of* Microfiche Filer *elsewhere in this issue.*]

The ARP Project version 1.03: by Charlie Heath

This is an update to the original release of the ARP Project, a replacement for AmigaDOS (which was reviewed in the February 1988 installment of this column). Bug fixes have been made to the ARP version of the Delete, Assign, Type and Join commands.

FFormat: by Tony Solomon

FFormat is a replacement for the AmigaDOS Format command. FFormat is 100% faster than the AmigaDOS Format command. FFormat also allows you to tell it to automatically install the disk after it formats the disk. You can also specify whether FFormat should verify each formatted track.

Makedir-Wiz: by J.L. White (Shareware: $5)

Here is a program that will let Workbench users create sub-directories by just typing the path name. In addition to creating a directory, Makedir-Wiz also creates a matching custom drawer icon to go with the created directory.

GravAttack: by Scott Peterson (Shareware: $10)

A very nice arcade game. The object in GravAttack is to pilot a spaceship through varied terrain in order to pick up six keys on each level. Gravity, a limited fuel supply and enemy bunkers that fire at you are your enemies. GravAttack features digitized sounds, 17 different levels and a high score table. It will run on a 512K Amiga, although you cannot have Workbench or other programs loaded.

Boing Machine: author unknown

Here is another nice ray traced animation, that was created in part with *Sculpt 3-D*. This animation is similar to the animations Rocker and Khanakas (reviewed as part of the *Sculpt 3-D* animation disk in the February 1988 installment of this column), but Boing Machine also has digitized sounds in addition to the animation portion of the demo.

Startle: by Hobie Orris

If you have been looking for a unique and eye-catching way to display a text file, take a look at Startle. If you give Startle the name of a text file as a command-line parameter, the program will slowly scroll the text file in front of a moving star field (i.e., just like the intro to the Star Wars movies). In addition to the text file itself, you can also tell Startle the color of the text to be displayed, and even specify a different font if you like.

Noborder: by Albert Kirk

This is another program that will reduce the potential for monitor burnout. Noborder eliminates the borders and bars on windows and screens. Unfortunately it does not seem to affect the Workbench environment.

Landing at IO: by Jimbo Barber

A compiled AmigaBASIC game that is based on the popular "Lunar Lander" theme. In addition to the regular landing screens Landing at IO has bonus screens, which allow you to pick up extra fuel (you have a limited fuel supply in this version).

Setbeep: by Mike Scalora

Setbeep allows you to jazz up the sound produced by the Intuition beep routine. With Setbeep you can replace the Intuition beep routine with any digitized beep sound in the IFF 8SVX format. The only problem with Setbeep is that it is not currently compatible with AmigaBASIC.

BattleMech: by Ralph Reed (Shareware: $20)

If you like complicated games involving combat between robots, BattleMech is your cup of tea. BattleMech allows you to design a robot, then lead that robot into combat against up to seven other robots at the same time. BattleMech uses a hexagonal map as the combat arena, which is displayed in the 16-color 640x400 pixel mode. The map has varied terrain including forests, swamps, rivers, lakes, mountains and "ablaze" areas, all with varying features. You can even choose what percentage of the map's hexagons will have mountains, hills and water in their areas.

BattleMech also has Intuition menus for ease of play and digitized sounds to add realism to the combat sequences. The robots have various weapons like lasers, rocket launchers, machine guns and particle projection cannons. Some robots can also fly for limited amounts of time. All robots can also use their arms and legs to kick, punch or land on top of an opposing robot. Eight different robots are provided so that you can start playing immediately.

There are many other factors that influence the game, including the weight of the droid, heat (most actions performed by a robot generate heat, which can eventually shut down the robot if the internal temperature gets too high), and four levels of damage for each body part. Each robot also has skill levels, and during combat each player must make skill rolls to do such tasks as successfully fire at an opponent, jump, charge, or just stay on his feet. Time is also an important factor in BattleMech.

I have had some problems with loading BattleMech. I can only seem to load the game itself from CLI (running it from Workbench, or booting it up as a bootable disk just don't work for me). Also, I haven't been able to successfully load the Factory program (which is used to design new robots) at all so far.

ClipIt: by Mike Scalora (Shareware: $10)

For those of you who liked Mike's SnipIt program (reviewed in the February 1988 installment of this column), here's a variation. What SnipIt allowed you to do with text files, ClipIt allows you to do with IFF pictures. ClipIt allows you to cut a piece from any IFF picture, and save it as a separate IFF picture (not a brush). ClipIt allows you to have up to five different clipped images in memory at one time. ClipIt will remain in the background until you call it into use via a hotkey. You can also tell ClipIt to go to sleep, until you want it to respond. This feature is provided so that if you have a program that uses the same keys as the ClipIt hotkey sequence, ClipIt won't interfere if you don't need it for the moment. ClipIt won't work with a HAM screen (since you cannot usually get a clean left edge due to the nature of HAM screens), although Mike has said on PeopleLink that he is currently working on that problem.

Mach: by Brian Moats

If you are not interested in running a lot of small utility programs that each do one thing, but rather in running one or two utility programs that do several things at once, take a look at Mach. Mach started as a mouse accelerator program. Mach can make your mouse move much faster, allowing you to cover the whole screen without having to move your mouse (and hand) very far.

Mach also originally came with a HotKey portion to it, which allows you to define macros that can be activated via the function keys in conjunction with the ALT qualifier keys (although you can use the AMIGA qualifier keys instead of the ALT keys if you like).

In version 1.2 of Mach, many new features have been added that give this utility program more functionality. It now duplicates the same features present in the

popular utility program PopCLI (reviewed in the August 1987 installment of this column). Also Mach adds the "Sunmouse" (which means that when the pointer is moved over any window, that window is automatically activated) and "Click to Front" (which means if you click on any window, it will be brought to the front just as if you had selected the window's Front Gadget) features to your environment. You can also remove Mach at any time via a special hotkey.

Nag: by Richard Stockton
(Shareware: $10)

For those of you would like to be "reminded" of upcoming important events by your Amiga, Nag can serve as an adequate substitute for your wife, mother or whoever. Nag is a calendar program that also allows you to enter notes for a certain day to mark a certain occasion. If you would like to be reminded of that event by the Amiga when it arrives, you can flag that event with the "Nag" flag. When that event arrives, Nag will open up a special window that displays the event. Nag will then beep at you using the standard Intuition screen beep function (although you can also have Nag use an audible beep function, which is provided as a separate program) every 30 seconds until you acknowledge the event's occurrence by clicking on the special window. You can even alter the configuration file to have Nag use the Amiga's built-in speech synthesis to speak to you. The only difference between this program and a real nag is that this program can be shut off much more easily!

PKAX: by PKWARE, Inc.
(Shareware: $25)

PKAX is a program that is used solely for extracting files from any normal Amiga archive (using the popular program ARC). What makes PKAX so special is that it uses file buffering techniques and optimized algorithms, so it extracts files from Amiga ARC archives much faster than any other program.

What makes the release of this program so important is not PKAX program itself, but the possibility that PKWARE will soon port PKARC, the standard of archiving program in the MS-DOS world, to the Amiga. Unlike ARC, PKARC has a special file compression mode called "squashing" that compresses files much better than any of the file compression modes currently used by ARC programs. This will ultimately mean that it will take you even less time to download a file off of a bulletin board or online service. Unlike the present alternatives to ARC—Zoo and PAK—PKARC will maintain 100% compatibility with archives created by ARC.

This month's column didn't turn out to be as long as I thought. There are other new programs that deserve fair mention that I just couldn't squeeze in time-wise. I'll try to catch up completely in next month's column. (Really!) As always, I can be reached on the Amiga Zone on PeopleLink (ID: G KINSEY), or on the IDCMP BBS (617) 769-8444, 8 p.m.-8 a.m. If you have written a public domain/shareware/freely distributable program, or have obtained one that you think is worth mentioning to all Amiga owners, please attempt to contact me via the above or through *Commodore Magazine*. See you next month.

Fish disks: *For a catalog, send a SASE and four loose stamps, or $1 to: Fred Fish, 1346 W. 10th Place, Tempe, AZ 85281.*

AMICUS Disks: *$7 per disk, or send $1 for a catalog to: PiM Publications, P.O. Box 869, Fall River, MA 02722.*

by Tim Jones

AmigaBASIC Tutorial

Style in Programming

A short program demonstrates difficult areas of AmigaBASIC, offering both tips on confusing areas and tricks to make your life easier. Rather than an article followed by a program, we have combined them for the sake of clarity.


BOB CLARK

```
' Previous installments of this series have examined many
' of the elements used to make up an AmigaBASIC program
' that take advantage of what the Amiga has to offer that
' is generally unavailable on other machines and in other
' versions of BASIC.  In this installment, let's put some
' of these things together in small ways to demonstrate
' how we can take a simple, and possibly boring, program
' and make it more elegant.

' So far as the average user is concerned, your program is
' only as good as its user interface.  You may have written a
' program that can run rings around its equivalent in Pascal
' or C, but, if the user interface is sloppy, you may have
' wasted your time.  This boils down to what is called "style."

' With a machine like the Amiga, many things become so second-
' nature to the user that a program without them is hard to
' use.  For example, after using any of the Amiga paint
' programs, how do you think a user would react to a program
' that forced him or her to use the joystick for drawing
' rather than the mouse?  Or, what if your word processor
' didn't have menus and you were forced to memorize Amiga key
' sequences to do the things that you do when word processing?
' I know that I would very quickly stop using these programs
' and go back to what I had been using.

' Since I started this column, I have been contacted by many
' people and shown bits of code for whole programs that look as
' if they were written for a Commodore 64 or Apple II.  Don't
' get me wrong, these machines are fine and the programs may
' have been great if used on these machines, but the Amiga
' allows for so much more.

' Let's start our discussion of style with a comparison of two
' short routines that involve menus.

SegOne:
  CLS
  LOCATE 3,25 : PRINT "1> Menu Choice 1"
  LOCATE 4,25 : PRINT "2> Menu Choice 2"
  LOCATE 5,25 : PRINT "3> Menu Choice 3"
  LOCATE 7,30 : PRINT "E> Exit"
  LOCATE 12,12 : PRINT "Exit to go to the next part"

GetEntry:
  G$ = INKEY$
  IF G$ = "" THEN GetEntry

' Of course, these are very simplistic examples, and I'm sure
' someone will point out that the first example used less
' code, but the key is in the way the user interacts with the
' example.  The first example works fine on one of the older
' style computers, but why limit your user to this type of
' interface when he or she has grown to expect an intuitive
' type of interface?

' Let's take a look at the difference that multiple windows
' make when giving help or information within a program.  In
' the examples that follow, we fill the screen with gibberish
' and then write the first help file to the same window as the
' text.  Next, we'll use a second window to display the help
' text.  Keep in mind that the default AmigaBASIC output
' window is considered a SMART REFRESH type window, meaning
' that it will restore anything that we cover up.

WinSegOne:
  MENU RESET
  CLS
  WIDTH 78
  FOR X = 1 TO 2000
    PRINT CHR$(INT(RND*64)+32);
  NEXT X

' Now, to print a help screen, we have to clear this screen,
' display the help and then rewrite the original screen:

HelpSCrnl:
  CLS
  LOCATE 5,1
  PRINT "This is the help screen.  Notice how we erased the"
  PRINT "Text to print this stuff!  Hit a key to continue."

EndHelp:
  G$ = INKEY$
  IF G$ = "" THEN EndHelp

Repaint:
  CLS
  FOR X = 1 TO 1000
    PRINT CHR$(INT(RND*96)+32);
  NEXT X

' Let's use the existing data and open the help screen as a
' new window.  Notice that this new help window can be
' relocated by the user if necessary.

NewHelp:
  WINDOW 2,"Help Example",(100,45)-(500,120),31,-1
  PRINT "This is the NEW help window.  Since the original"
  PRINT "Window was a smart refresh, the text will still"
  IF G$ = "1" THEN GOTO One
  IF G$ = "2" THEN GOTO Two
  IF G$ = "3" THEN GOTO Three
  IF UCASE$(G$) = "E" THEN GOTO SegTwo
  GOTO GetEntry

One:
  LOCATE 20,1 : PRINT "1" : GOTO GetEntry

Two:
  LOCATE 20,1 : PRINT "2" : GOTO GetEntry

Three:
  LOCATE 20,1 : PRINT "3" : GOTO GetEntry

' Now, let's use the Amiga's MENU structure and the mouse to
' perform the same type of operations.

SegTwo:
  CLS

  MENU 1,0,1,"Options"
    MENU 1,1,1,"Choice 1"
```

```
      MENU 1,2,1,"Choice 2"
      MENU 1,3,1,"Choice 3"
      MENU 1,5,1,"EXIT"
    MENU 2,0,0,"" : MENU 3,0,0,"" : MENU 4,0,0,""

  Main:
    WHILE -1
      ON MENU GOSUB Menus : MENU ON
      SLEEP
    WEND

  Menus:
    Item% = MENU(1)
    IF Item% = 1 THEN
      GOTO MOne
    ELSEIF Item% = 2 THEN
      GOTO MTwo
    ELSEIF Item% = 3 THEN
      GOTO MThree
    ELSEIF Item% = 5 THEN
      GOTO WinSegOne
    END IF

  MOne:
    LOCATE 20,1 : PRINT "1" : RETURN

  MTwo:
    LOCATE 20,1 : PRINT "2" : RETURN

  MThree:
    LOCATE 20,1 : PRINT "3" : RETURN

  PRINT "be there when you click me closed.  Click the"
  PRINT "CLOSE Gadget to continue"

IsItClosed:
  WHILE WINDOW(0) <> 1 : WEND
  WINDOW OUTPUT 1

' Another feature that users have grown used to is Gadgets.
' You know, those little buttons that you can click on to
' invoke an action, or the sliders you can move to adjust a
' display.  I saw two different program examples that almost
' used them.  The results are as you see in the very next
' example.

Gadgets:
  CLS
  LINE(25,25)-(45,35),2,b
  LINE(25,55)-(45,65),2,b
  LINE(25,85)-(45,95),3,b
  LOCATE 3,40
  PRINT "Click in a box (3rd one exits)"

GetClick:
  WHILE -1
    ON MOUSE GOSUB Boxes : MOUSE ON
    SLEEP
  WEND

Boxes:
  I = MOUSE(0) : X = MOUSE(3) : Y = MOUSE(4)
  IF X > 24 AND X < 46 THEN
    IF Y > 24 AND Y < 36 THEN
      LOCATE 21,5
      PRINT "Box 1"
    ELSEIF Y > 54 AND Y < 66 THEN
      LOCATE 21,5
      PRINT "Box 2"
    ELSEIF Y > 84 AND Y < 96 THEN
      LOCATE 21,5
      PRINT "Bye - bye"
      FOR Delay = 1 TO 300 : NEXT Delay ' I Know...
      GOTO NewGadgets
    END IF
  END IF
  RETURN

' Now, if we take this basis and add a bit of flourish to it,
' we can give a little visual feedback that will let the user
' know that the selection has been acknowledged.

NewGadgets:
  CLS
  LINE(25,25)-(45,35),2,b
  LINE(25,55)-(45,65),2,b
  COLOR 2 : PRINT "THIS IS COLOR 2"
  COLOR 3 : PRINT "THIS IS COLOR 3"
  COLOR 1 : LOCATE 15,15
  PRINT "Press a KEY to continue"

  GOSUB ColorKey

Pal1:
  PALETTE 0,0,0,0
  PALETTE 1,.8,0,0
  palette 2,0,.8,0
  PALETTE 3,0,0,.8

GOSUB ColorKey

Pal2:
  PALETTE 0,.8,.5,.2
  PALETTE 1,.3,.2,.1
  palette 2,.1,.2,.5
  PALETTE 3,.5,.7,.2

GOSUB ColorKey

' Notice the difference that just changing the colors made.
' Another way to spice up a display is to use a custom screen
' of 3 to 5 bitplanes, which gives you up to 32 colors to
' choose from.  You can then get really creative with your
' displays.

' This is just as easy as creating 2 bitplane windows, the
' only difference being that you have to open a screen.  An
' example would be:

SCREEN 1,640,200,4,2

' Now, just reassign WINDOW 1 (or whatever window you're using)
' to this new screen:

WINDOW 1,"4 Bitplanes",,,1

' Now you can call, in this example, up to 16 colors (2^4) for
' your display.

FOR X = 1 to 500
  COLOR INT(RND*15)
  PRINT CHR$(INT(RND*26)+32);
NEXT X

GOSUB ColorKey

WINDOW 1,"BASIC",,,-1
SCREEN CLOSE 1
END
  LINE(25,85)-(45,95),3,b
  LOCATE 3,40
  PRINT "Click in a box (3rd one exits)"

GetClick2:
  WHILE -1
    ON MOUSE GOSUB Boxes2 : MOUSE ON
    SLEEP
  WEND

Boxes2:
  I = MOUSE(0) : X = MOUSE(3) : Y = MOUSE(4)
  IF X > 24 AND X < 46 THEN
    IF Y > 24 AND Y < 36 THEN
      LOCATE 21,5
      Curr = TIMER
      LINE(26,26)-(44,34),3,bf
      PRINT "Box 1"
      WHILE TIMER < Curr + .5 : WEND
      LINE(26,26)-(44,34),0,bf
    ELSEIF Y > 54 AND Y < 66 THEN
      LOCATE 21,5
      Curr = TIMER
      LINE(26,56)-(44,64),3,bf
      PRINT "Box 2"
      WHILE TIMER < Curr + .5 : WEND
      LINE(26,56)-(44,64),0,bf
    ELSEIF Y > 84 AND Y < 96 THEN
      LOCATE 21,5
      Curr = TIMER
      LINE(26,86)-(44,94),1,bf
      PRINT "Bye - bye"
      WHILE TIMER < Curr + .5 : WEND
      LINE(26,86)-(44,94),0,bf
      FOR Delay = 1 TO 3000 : NEXT Delay ' I Know...
      GOTO Colors
    END IF
  END IF
  RETURN

' Finally, let's take a look at the difference that color
' manipulation can have on a program.  If you are working from
' the default Workbench colors, you either like blue and
' white, or you are new to the Amiga.  Let's examine different
' ways to spice up a display with color.

' First, if you are only going to use the default 2 bitplane
' deep screen, select four colors that complement, yet offer
' some degree of contrast.  I like to use a Black background
' with mild shades of green, red and blue.  Take a look:

Colors:
  CLS : LOCATE 12,1
  PRINT "THIS IS A COLOR EXAMPLE - COLOR 1"

ColorKey:
  G$ = INKEY$
  IF G$ = "" GOTO ColorKey
  return

' As you can see, simple additions can mean the difference
' between a good program and a great one (in the eyes of a
' user).  I don't claim that any of these examples are
' outstanding by themselves; they are strictly designed as
' examples to fire your imaginations.  AmigaBASIC programs can
' be just as usable and friendly as any other type of program
' on the Amiga, and they are much easier to write!

' Until next time...
```

END

by Tim Jones

Disk Documenting

Organize your Amiga files for speed and efficiency.



ART BAXTER

With more people moving from the simple disk operating systems of computers like the Commodore 64 and 128 to the more complex DOS of the Amiga, I have begun to see quite a bit of confusion among users over the purpose of sub-directories and the proper methods of managing disks, both floppy and fixed.

In the older, less complicated systems, it was standard practice to place *all* of your files into what is known as the root, or main, directory. This wasn't due to ignorance on the user's part; the system didn't allow any other method of storing files. Another factor was the storage size of the disks themselves. With most disks storing between 80K and 170K of data, along with the limitations on the number of directory entries allowed, you would often find no more than 20 to 25 files on a disk.

This is not the case on a system with a more advanced DOS like the Amiga. Since you have over 880,000 bytes of storage space available on a single floppy disk, and even more if you have a fixed disk-based system, the ability to have literally hundreds of files on a disk makes it more difficult to manage the data stored on them.

If you were to take all of the files on a standard Workbench disk and place them into the root directory of another disk, aside from confusing the Amiga when you tried to boot it, you would find that simply asking for a directory (DIR) would be a major task. First it would take AmigaDOS over 45 seconds just to read and sort the entries, and second, it would take two and a half screen lengths to display the data. True, it would be easier to locate a specific file, but the clutter on the disk would soon become a nightmare.

When you move up to the Amiga you should update your understanding of how its Disk Operating System works. I recently visited a friend who had an Amiga 1000 with a 20MB fixed disk. I went into the CLI and asked for a DIR of DH0:. Was I surprised when I found over 300 files in the root directory and *no* sub-directories whatsoever. Even with the speed of the fixed disk, it took over 70 seconds to sort the filenames before the actual listing was displayed. Then, it took over six screens to display them all. We spent the remainder of that Saturday afternoon reconstructing his disk and teaching him how to use a hierarchical DOS properly.

That afternoon it dawned on me that there must be a lot of people out there with the same problem. The strength of a complex DOS, like AmigaDOS, is its ability to segregate areas of a disk (not necessarily physically) and use them to store data grouped in a manner to make it easier for the operator to find and manipulate.

An example of this can be seen by examining your Workbench disk. Try the following command with your Workbench disk in DF0: DIR DF0: This tells AmigaDOS to give you a sorted listing of the contents of the disk in drive DF0:. This listing will consist of ten directories (usually) and a few files.

Now, try the following variation: DIR DF0: OPT A. Not only do you get the listing you got above, but all of the directories have also been opened (along with any additional sub-directories) with the contents sorted and displayed. What you see is a listing of the files in each sub-directory with a final listing of any files in the root directory.

A hierarchical system can be thought of as a tree. You will always have what is referred to as the root, and from the root there will be branches. These branches may end in leaves or sub-divide further into more branches with more leaves. As with the tree, AmigaDOS treats a disk device in a similar manner. The *root* would be the top-most level directory. The *branches* would then be the *directories* and *sub-directories*. The *leaves* would be the individual *files*.

When examining the structure of your Workbench disk, you should notice that there are a number of directories that contain files and sub-directories of files that relate to one another. Take, for example, the Fonts directory. Within this directory are the files that tell the system which fonts are available along with the sub-directories that contain the actual font definition files. All of these files relate to one another, so the architecture of this particular directory makes sense. The other directories are arranged similarly.

If you've been storing files on a workdisk without separating them into groups, you probably have a very chaotic workdisk. For example, a C programmer creates a workdisk to store his source files, header include files, and the precompiled startup code files. After a number of pro-

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Brown-Wagh was showing *TV*SHOW* a video production and presentation package. *TV*SHOW* allows you to take any IFF screen, in any resolution, and use it "in more ways than you can imagine." Some of the options provided are wipes, fades, rolls, reveals, zig-zags and object animation. *TV*SHOW* was produced by the Zuma Group and supports the ituitive interface that their products are known for. *TV*SHOW* supports high or medium resolution, overscan, HAM and allows use on both NTSC and PAL systems.

NewTek was demonstrating the abilities of two programs—update version 2.0 of their Digi-View and what they are referring to as the Video Toaster. The latest version of Digi-View allows for the highest speed, single frame video capture of any video capture system available for the Amiga. In addition, Digi-View's three-color filter wheel allows you to use a low-cost black and white video camera and gain the same type of results normally available only with RGB broadcast video cameras priced in the $10,000 range. If you have the use of a framegrabber, it is possible to use Digi-View to capture images with 21 bit planes, for a total of over 21 million colors.

The Video Toaster, on the other hand, gives you the power of a $100,000+ video switcher. You can twist, spiral, slide, fade and any of the other functions that you have available in a professional studio for quite a few dollars less. The Video Toaster took the place of NewTek's earlier "Maxine Headroom" demos as the main video attraction at the Commodore booth.

If you're into graphic arts, a name to watch for in the near future is MicroIllusions. MicroIllusions has begun work on a series of graphic arts aids that they are calling *Photon Video*. This series will supply the artist with all of the software tools required to do everything from image creation to full cell animation at over 60 frames per second to full ray-trace image creation and 3D modelling. The *Photon Video* system promises to be the most complete graphics system available for the Amiga family. Just the abilities of the Cell Animator module will increase your animation productivity by a large percentage. You have complete step control over your animation sequence. You can move forward or backward through the animation sequence and then rearrange your frame sequence in any order. The interface is very friendly which adds that much more to the value of the *Photon Video* system. MicroIllusions has designed the system to allow the artist to take advantage of the numerous animation and image styles currently being used on the Amiga.

Aegis was also present at COMDEX with their 3D production and animation package, *VideoScape 3D*. As with all of the various types of 3D production software that has been created for the Amiga, Aegis' product makes full use of the Amiga's Intuition interface, thus creating a package that is very easy to use with the simplest of instructions. They have included all of the functions necessary to take you from object creation to full sequence animation in one package. *VideoScape 3D* was one of the earliest entries in the Amiga ray-trace and animation world.

The original entry was a package from Byte by Byte, however. *Sculpt 3-D* was the first true commercial ray-trace package released for the Amiga. So far as ray-trace packages go, Eric Graham, *Sculpt 3-D*'s author, has provided one of the best environments for the creation and manipulation of three-dimensional models on the Amiga. *Sculpt 3-D*, in addition to its abilities as an image creation program, is also very good at introducing a novice to the ideas behind 3D modelling. Byte by Byte also announced their animation package *Animate 3-D*. While *Sculpt 3-D* is a stand-alone package, *Animate 3-D* requires that *Sculpt 3-D* be used as its object editor.

The Video Toaster, on the other hand, gives you the power of a $100,000 + video switcher.

In the realm of new video production hardware, two companies were showing the goods—Southern Technologies/Mimetics with their AmiGen broadcast-quality Genlock and A-Squared, with Live!

When Commodore released the original Genlock for the Amiga 1000 in 1986, it was very well received. However, the output of the device was soon discovered to be a bit too "hot" for use in true NTSC production environments. Also, due to changes in the port designs of the Amiga 500 and 2000, the original Genlock cannot be used with these models.

The AmiGen, on the other hand, doesn't have any of the problems associated with the original Genlock. The composite output is of the proper signal level for broadcast use, and it can be used on all three Amigas without any difficulty. The AmiGen allows you to synchronize the output of the Amiga's video with external sources and superimpose Amiga images over external video material then output the combined picture as a broadcast-quality composite video signal.

Live! from A-Squared is a product that we have been hearing about since the dawn of Amiga history, back in 1985. After many changes of direction (and operating system), A-Squared has finally perfected and released the system. Live! is a video interface/software package designed to allow you to capture real-time video with the Amiga and manipulate the images in various ways. The results can vary from simple black and white captured images to Andy Warhol-style avant-garde video imagery.

Desktop Publishing Has Arrived

With all of the various art and production packages emerging, it is only natural that the world of desktop publishing should find its way onto the Amiga. With their original introduction of *Pagesetter*, Gold Disk opened the door to desktop publishing. It wasn't long before other companies followed suit and released other packages for the Amiga. With *Pagesetter* proving that publishing can be enjoyed by the masses without an investment of tens of thousands of dollars, it wasn't surprising when Gold Disk announced their upscale publishing package, *Professional Page*. While *Pagesetter* gave you the basic tools for use in desktop publishing, *Professional Page* promises to take you that one step further and provide you with the tools necessary to keep up with the systems that the big boys are using. With features like true color separation, *Professional Page* gives you the ability to produce magazine-quality artwork for a fraction of the cost.

Also in the publishing arena is *City Desk*, which includes full Postscript laser support. *City Desk* is produced by MicroSearch, who announced that they have seen a 50% increase in product sales since the introduction of the Amiga 2000. MicroSearch has also introduced *City Desk Art Companion*, with 200 medium-resolution clip art images designed strictly with desktop publishing in mind.

Brown-Wagh Publishing's entry in the Amiga desktop publishing race is *Publisher 1000*. This is another one of those packages that kept us hanging as it underwent the

myriad of changes necessary to move through three different operating system revisions. Since its release, however, *Publisher 1000* has added a very complete and intuitive package to the desktop publishing market. Brown-Wagh is doing a very good job of marketing, and supporting this outstanding product.

Shakespeare—Color Desktop Publishing from Infinity Software was also at COMDEX. *Shakespeare* is the first full-color entry into this market on the Amiga. *Shakespeare* offers "an unprecedented mix of power and ease of use, enabling users to create full-color layouts in minutes." The main difference between *Shakespeare* and the others is the true WYSIWYG (What You See Is What You Get) environment. While the others show you the final result of your work as WYSIWYG, *Shakespeare* actually allows you to see changes as you make them. Text editing, style and font changes are shown as they occur, so you have instant feedback when a change is made.

Hardware Abounding

In addition to the video production hardware I mentioned above, there were also a number of hardware items that fall under a more general hardware category.

Easyl, a pressure tablet from Anakin Research is now available in models for the Amiga 500 and 2000. The earlier 1000-based version of the Easyl proved to be a major improvement, giving artists an alternative to the mouse for image creation. Now, with its availability on the Amiga 500 and 2000, artists, designers, animators and desktop publishers have the finer control that could make life with the Amiga much more enjoyable.

Byte by Byte has announced the release of The Byte Box, a 0K to 2MB memory expansion box for the Amiga 500. The Byte Box is a self-powered, external device that allows you to increase the usefulness of your 500 by adding up to 2MB of Fast RAM. Unlike the 501 memory unit from Commodore, The Byte Box is true Fast RAM. When speaking with Scott Peterson of Byte by Byte, he explained, "The Byte Box was designed to be as simplistic as possible. We have kept the component count to a minimum, thus increasing the reliability of the unit." The unit can be purchased with either 0K, 512K, 1MB or 2MB of memory installed.

As I mentioned above, Commodore was also previewing their newest MS-DOS compatibles: the new, multi-speed PC-10 III and the 80386-based PC 60/40. The PC-10 III is a new version of the PC-10 I and II, Commodore's first U.S. releases in the MS-DOS world. It supports three processor speeds—4.77MHz, 7MHz and 9MHz, has a smaller footprint and now offers a 3.5-inch internal drive.

The PC 60/40 is a totally new machine, utilizing the new architecture of Intel's 80386 microprocessor. For demonstration purposes, the PC 60/40 was running a self-driven CAD demo. The screen display rate was so fast that you couldn't read the text used to explain each screen. For those of you familiar with the MS-DOS world, the PC 40/60 turned in a Norton SI Rating of 19.7 with a DI Rating of 5.3. I'm sure we'll be hearing more about these machines in the near future.

All Work and No Play . . .

Since one of the main comments made about the Amiga in its early days dealt with its potential to become the "ultimate game machine," it wasn't surprising to see quite a few games being played in the Commodore booth.

Among those displaying entertainment software were Electronic Arts, Firebird Licensees and Mindscape. Electronic Arts' big hitters were *Ferrari Formula One* and *Return to Atlantis*. *Ferrari Formula One* is a race game that uses every ounce of performance in the Amiga to ensure that you are in for the ride of your life. You are given the choice of the 16 international race tracks involved in the Formula One circuit and you can drive any given track, or select to marathon your way through the entire circuit. *Return To Atlantis* is an undersea role-playing adventure game, in which you take over the persona of an undersea explorer employed by a secret organization. There are fourteen missions that you must undergo in search of your ultimate goal—The Secret of Atlantis.

Firebird was showing off their line of text/graphic adventure games and *Starglider*, an arcade-type space shoot 'em up. With the success of their adventure game, *The Pawn*, it is no surprise to find that its sequel, *Guild of Thieves*, is just as good. What is odd is that the text parser and graphics are actually better. I was told that the creators brought in professional artists and writers to aid in the development of *Guild of Thieves* and the future text/graphics games that Firebird will be releasing.

Starglider, on the other hand, is a straight-forward arcade action game, very similar to the arcade hit *Star Wars*, but with a twist. In order to increase the playability of the game, the authors have also created a very good science fiction novella that explains the game in a manner which increases its enjoyment tremendously. In fact, all of the Firebird games have supportive novellas that are an integral part of each game.

Mindscape was exhibiting their line of entertainment software. The most notable are the animated text/graphics games *Deja Vu* and *Uninvited*. These games are fully graphics oriented and complete with *very* realistic sound effects, or they can be played as straight text. In *Deja Vu*, you are required to discover your identity, reconstruct pieces of a crime puzzle and then clear your name. In *Uninvited* you and your brother are stranded and separated in a strange house. You must avoid the—uh, surprises, while attempting to find your brother and get out with your life (and sanity).

Also in the Mindscape lineup is the Cinemaware series, a set of adventure/arcade games with extremely high graphics quality. Cinemaware takes you from being a land baron in medieval Europe in *Defender of the Crown*, to portraying Sinbad in *Sinbad and the Thrown of the Falcon* and into the near future as the only trained participant in the battle for world peace via Star Wars in *SD I*.

Elsewhere . . .

Supra Corporation and Progressive Peripherals and Software had booths of their own. Supra was showing a new line of hard drives for the Amiga family. Watch for a review of the Supra Drive 500 in an upcoming issue of *Commodore Magazine*.

Progressive Peripherals and Software had quite a lineup of products to preview at their booth. In addition to *Desktop VizaWrite* and *SuperBase Professional*, they were also showing off *PIXmate*, an image enhancement package; *IntroCAD* and *UltraCAD*; the EXP series of memory expansion boards for the Amiga 500; the Pro-drive, a new, ultra-small external 3.5-inch drive; and *Access 64*, a software/hardware package that allows the use of Commodore 64 and 128 serial port devices with the Amiga.

Until Spring . . .

Although I tried to cover as much of the show as I could, it seems that *two* weeks wouldn't have been enough time to visit every booth and vendor that dealt with the Commodore line. If I've left you out, my sincerest apologies. I hope to see you at Spring COMDEX '88.

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The Exhibit Hall

Meanwhile back in the exhibit hall, hardware and software companies were showing new Amiga products to thousands of enthusiasts. Here, in no particular order, are some notable exhibits:

One of the biggest booths belonged to Discovery Software. They were premiering the most popular game at the show—the Amiga version of the smash arcade coin-op game *Arkanoid*, licensed from Taito America. *Arkanoid* is a second-generation version of the famous game *Breakout*. Discovery has faithfully duplicated the arcade-quality graphics in the Amiga version, and some thought that the Amiga version actually sounds better than the arcade version. *Arkanoid* retails for $49.95.

Discovery was also showing *Amnix*, which is a Unix-style shell program. *Amnix* has over 40 resident high-speed commands. Resident commands are commands that reside in memory, but don't create a wasteful duplication that can happen while using a RAM-disk to store your commands. *Amnix* also supports command histories, aliases and many other features. *Amnix* also retails for $49.95.

Byte-by-Byte held the attention of many onlookers at their booth with arguably the best graphics demos at the show. They were showing sample ray-traced HAM animations created with *Sculpt 3-D*, their ray tracing/solid modeling package, and the soon-to-be released support package for *Sculpt 3-D*, *Animate 3-D*, which allows you to create animations from frames that have been rendered with *Sculpt 3-D*.

The battle of the Amiga C compilers has started up again. Lattice fired the opening salvos in this round with the announcement of version 4.0 of Lattice C for the Amiga. Lattice's major claim is that version 4.0 is much faster. Their advertising highlights benchmark comparisons that show that Lattice 4.0 clearly surpasses version 3.4 of Manx's Aztec C in Dhrystone, Float

Arkanoid is a second-generation version of the famous game *Breakout*.

and IEEE Savage benchmarks. Version 4.0 of Lattice C also supports 16-bit integers, which can significantly reduce the size of compiled programs as well as increase the execution speed of the program.

Not to be outdone, Manx was displaying a major update of their Aztec C compiler. Although they have updated the C compiler itself to version 3.6, the big story was Manx's announcement that the Source Level Debugger (SDB) for the Aztec C compiler is now available. The SDB's display environment uses two separate resizeable windows to display code, plus a command line window. Some of SDB's features are macros, line-by-line tracing and back tracing, conditional breakpoints (on lines, functions or variables), and display and modification of variables (global, local and static), structures or expressions. The SDB retails for $75 (most people who already own Aztec C will not receive the SDB as a free upgrade, although some owners of the commercial package many be able to purchase it at a reduced price).

SunRize introduced a digitizer which will digitize black and white images in real-time. Retail price is $219. They were also demonstrating *Studio Magic*, a digital sound studio program which supports MIDI (including sequencer support), Fast Fourier Transforms, over a dozen digital effects and is designed to complement their inexpensive *Perfect Sound* audio digitizer. *Studio Magic* retails for $99.95.

As the number of Amiga users grows, so does the number of Amiga publications. *Enigma* magazine premiered its first issue at AmiEXPO. *Enigma* is produced in England, but is intended for international distribution. In the premier issue R.J. Mical gives an overview of Amiga history. This issue also includes articles from such well-known U.S. authors as Peggy Herrington (the "denmother" of Amiga authors), Steve Pietrowicz and Harv Laser. The publisher of *Enigma*, Julian Rosen, is available to anyone in the U.S. via PeopleLink. *Enigma* will be concentrating on the Amiga 500, but since all three Amiga computers are software compatible that shouldn't discourage most potential readers.

Two disk magazine companies were present at AmiEXPO. *Jumpdisk* was the first disk magazine to appear for the Amiga. A *Jumpdisk* representative claimed that all *Jumpdisk* programs will require only 512K of memory and that *Jumpdisk* will continue to be dominated by AmigaBASIC programs.

The other disk magazine at AmiEXPO was relative newcomer Vertex Associates with the fourth issue of *AMnews*. This issue contained three disks packed with information and programs for $9.95. Unlike most disk magazines, *AMnews* does not include a lot of public domain programs. It also uses its own custom multi-color iconic user interface, instead of Workbench. This is what an Amiga magazine on disk should look like. Vertex Associates will also be coming out with a whole line of low cost, fast arcade games. They were showing *Footman*, a two player *Pacman*-type game, and *Quasar*, which is remotely similar to *Galaxian*.

Spirit Technology had their new memory expansion board, called the Inboard, for the Amiga 500. Like their memory board for the 1000, the 500 Inboard installs inside the machine and has a socket for the 68000 so that the board is positioned between the 68000 and the motherboard. The Inboard can hold up to 1.5MB of memory and comes with a clock calendar, as well as 2.4K of battery-backed RAM. The battery-backed RAM allows you to keep special utility programs in memory at all times, even when you re-boot or turn off your machine. The 500 Inboard retails for $279 (with no memory installed).

There was a flood of new music programs at AmiEXPO. For beginners, Infinity was showing *HotLicks*, an easy-to-use program that is both IFF and MIDI compatible. You can play notes via either the mouse or the keyboard. If you use the keyboard, you can remap it to simulate a musical keyboard, and you can change the octave range that the keyboard covers at any time. *HotLicks* has rhythm guides, and the popular jam mode (made famous by Electronic Arts' *Instant Music*). It also has built-in tape recorder-style controls, metronome and jukebox functions. *HotLicks* retails for $49.95.

> There was a flood of new music programs at AmiEXPO.

The Other Guys also entered the Amiga music market with *Synthia*, a digital synthesizer that allows you to create IFF instruments or modify existing instruments. You can operate in a variety of synthesis modes including additive mode, pluck string mode, interpolative mode (introduces natural imperfections into instruments and their materials), and subtractive mode. There are many special effects included, like reverberation, filters, amplification and amplitude modulation. *Synthia* supports harmonics from the first up to the 16th harmonic. A music player that takes up very little memory is also included. Despite the long list of features, the representative I talked to said that *Synthia* is a very easy program to use. *Synthia* retails for $99.99.

Sound Quest was showing off an Editor/Librarian program, which is exclusively intended for Amiga owners of the Roland D-50 LA Synthesizer. Their D-50 Master Editor/Librarian uses a screen that is jammed full with patch panel controls and information. They were also showing Amiga version 2.4 of *Texture*, a widely acclaimed professional MIDI software package that originated on the IBM-PC. *Texture* requires a Roland MPU-401 MIDI interface plus an MIF-AMG adapter and retails for $199.95.

Mimetics was demonstrating their well-known *Soundscape*, which turns your Amiga into a multitasking multi-track recording studio. *Soundscape* retails for $149.95.

The music program that was turning the most heads was New Wave Software's *Dynamic Drums*. *Dynamic Drums* allows you to create your own drum tracks. It comes with 20 different digitized drum samples. With two megabytes of memory, you can have ten different songs and 99 patterns in memory. It supports randomizing (for a more human effect), adjustable volume and tuning, as well as MIDI. When you read about the program, it doesn't really seem like a big deal. When you actually get a chance to hear what it can do, you'll be amazed. *Dynamic Drums* retails for $79.95.

For those power users who won't settle for just a 68000 in their Amiga, CSA had 68020 boards for the Amiga line. All three versions support optional 68881 math co-processor upgrade capability. While the CPU runs at 14MHz, you can run the 68881 co-processor as high as 20MHz. A CSA representative told me that he had just received the results from the benchmark tests for the CSA boards with the 20MHz 68881. The Whetstone result for CSA's board was 1122. For a comparison to more expensive machines, a Sun 3/260 Workstation, which is rated at 4 MIPS and retails for an affordable $45,000 tests out at 1144 Whetstones.

There were lots of other new and interesting graphics and animation packages on the AmiEXPO floor. Impulse was premiering their new 3D package called *Silver*, a ray-tracing/solid modeling package with built-in animation support. The program supports many object primitive shapes, including spheres, triangles, rectangles, rings and cylinders. *Silver* retails for $169.95.

R & DL Productions was previewing *Lightbox*, a program that simulates the lightboxes used by cartoon artists to create Disney-style animation. The program supports different IFF resolutions and can animate the drawing at any time. Price is yet to be determined; the product is set for release this spring.

Those who were still present on Sunday were rewarded with the arrival of Very Vivid. Very Vivid premiered their software package *Mandala* to the AmiEXPO attendees at their booth and staged a world premier with a dazzling presentation at the Tunnel, a popular Manhattan disco. *Mandala* is a complex package that allows people to play music like never before. You stand before a camera, which captures your image, then mixes it with computer graphics. The combined image is then displayed. You can see yourself move on the screen, with graphic objects scattered all around you. Now the fun part starts. If you "touch" one of the graphic objects, a collision is detected, a MIDI event is then triggered, and *Mandala* sends the MIDI event to an external synthesizer which creates a sound.

What this means is that you can play music just by moving your hands and feet or other

parts of your body! If you get tired of the available instruments, you just touch the "scene changer" object which is always positioned directly above you, and a new scene appears with new objects and sounds. Anyone who sees this system in action is completely awestruck.

On a more down-to-earth level, two different Commodore 64 emulators for the Amiga were at the show. The emulator first unveiled a while ago, *GO-64*, was being shown and sold at AmiEXPO by its distributor, Southern Technologies.

The newer emulator at the show was Readysoft's *The 64 Emulator*. Both products actually run most Commodore 64 programs on your Amiga, and both allow you to hook up a 1541 drive to your Amiga by means of an adapter that you plug into the Amiga's serial port. Both emulators have trouble when trying to load heavily-protected 64 games, and both emulators completely take over the Amiga. As for differences between the emulators, *GO-64* does not emulate the SID chip, and *The 64 Emulator* has a special monochrome graphics mode that increases the emulation speed. *GO-64* retails for $69.95, and *The 64 Emulator* retails for $59.95 ($39.95 without the serial port adapter).

MicroIllusions was showing and previewing many different products. Already available are *Faery Tale Adventure* (reviewed in the January 1988 issue) and *DynamicCAD*. New products at the show include the first of their One-on-One series of games, *FirePower* and *BlackJack Academy*. *FirePower* is a two-player tank game that includes support for two people to play via modem hookup. *BlackJack Academy* is everything you could possibly think of in a serious blackjack simulation. Also shown was the latest demo of *Land of Legends*, their fantasy role-playing game that supports auto-mapping, and *EbonStar*, an exciting looking arcade game with four-player capability. MicroIllusions also had *Music-X*, their sophisticated music package with optional MIDI interface and SMPTE support.

The Seminars

At AmiEXPO, there were 35 different seminars each focusing on a particular aspect of the Amiga. The seminars featured Commodore representatives, third party representatives and noted independent experts. Important seminars were given more that once, with different speakers for each session. For example, the speakers for the first Introduction to the Amiga 500 seminar on Saturday morning were Peter Baczor, User Group Support Manager for Commodore, and Jim Gracely, Managing Editor of *Commodore Magazine*. A second Introduction to the Amiga 500 seminar on Sunday afternoon was headed by Jeff Porter, Technology Director for Commodore International.

The Introduction to the Amiga 2000 seminar was also held twice. The Saturday morning seminar featured Gail Wellington, Commodore's Director of CATS (Commodore-Amiga Technical Support), and Bill Reed from CSA, while the Monday seminar featured Bob Ryan, Technical Editor for *AmigaWorld*.

There were three seminars devoted to desktop publishing. On Saturday morning an entry-level desktop publishing seminar featured representatives from New Horizons (*ProWrite*), Vertex (*Redact*), MicroSearch (*City Desk*) and Brown-Wagh (*Publisher 1000*). Another desktop publishing seminar that afternoon, focused on the professional end of desktop publishing. Representatives from WordPerfect, Infinity (*Shakespeare*), and MicroSearch were on hand. Yet another desktop publishing seminar on Sunday focused on the Amiga's unique position in that market. Kailash Ambwani, President of Gold Disk (*Pagesetter* and *Professional Page*) was the speaker.

Some of the more unusual seminar topics included Computer Journalism and the Marketplace; Beginning a Business with Amiga; Move Over Marvel (Creating Comics on the Amiga); Interior Design: Art, Antiques and Amiga; Local Area Networks; The Amiga as a 32-bit Desktop Workstation and Modula-2.

> Using all 24 bits of RGB color information translates to a mind-boggling 16 million colors at once.

Let me describe a couple of the seminars I was able to attend. The first seminar I attended was on Amiga Laser Art. The guest speaker was Patrick Murphy, Art Director for NightLight Laser Design Studio. NightLight Laser Design Studio creates professional laser light shows and has been using the Amiga for over a year to control the laser beam which generates shapes and designs by tracing the dot from the laser beam very fast through a pre-programmed path. A variety of lasers can be used, with costs as low as $500 for home use to $5000-$10,000 for lasers used in planetarium shows and other applications where the projection wall is far away from the viewers.

Murphy discussed how a laser beam is generated, then controlled by scanners, which are tiny mirrors that deflect the beam (similar to the charged deflector plates inside your TV that control the electron gun), so that you can move the laser dot. NightLight uses the Amiga to control the scanners via the audio circuits in the Amiga. The standard audio outputs on the back of the Amiga are directly hooked up to the scanner amplifiers which control the scanner mirrors. The stereo audio outputs on the Amiga allow Night-Light to easily control both mirrors (one each for vertical and horizontal motion) without having to design expensive add-on hardware. Nightlight chose the Amiga due partly to the stereo audio output, but also since it has room for a lot of memory, and the Genlock device allows you to design your drawings while having the wall or other area where the laser will be projected behind the drawing via a live camera.

Another seminar I attended at AmiEXPO focused on Image Processing. The guest speakers were Rich Miner, Computer Graphics Research Manager at the University of Lowell (MA), and Bob Hoover from Mimetics.

Miner covered various topics related to the concept of image processing and mentioned the Amiga software and hardware available. In the area of desktop publishing, packages on the Amiga now allow you to incorporate images into your documents. Amiga desktop video software allows porting of still images into real-time or non-real-time video productions.

Image manipulation and processing systems do exist on the Amiga, but Miner feels that the few products currently available are very basic and have a long way to go before they can truly be considered professional-level packages. Likewise in the area of imaging scanners and sensors, products like DigiView have begun to bring the Amiga into this area, but Miner stated that there are currently no page scanning systems available for the Amiga, which would be a giant leap forward for those who would like to scan pages and then port the scan into an Amiga desktop publishing package.

The Amiga is also just start-

ing to enter the area of image display and electronic printing. New products that allow color separations have helped in this area. The University of Lowell has built an image co-processing board for the Amiga, but it is not on the market yet. As far as image storage goes, the Amiga is very strong in static graphic images due to the IFF format, but weak in the area of storing single video frames and storing animation, although progress is being made.

Miner sadly noted that in the area of machine vision systems the Amiga has nothing to offer and seems to be making little progress for the near future. The Amiga is also sorely lacking in the area of image recognition, although Miner said that the University of Lowell would be showing an image recognition system at the Electronic Imaging Conference (November 1987) that worked on the Vax, Apollo, and Amiga.

Miner then reviewed the areas in the image processing market for which there is currently high demand. Interactive imaging is no problem for the Amiga right now, and it will continue to be a driving force in this area. Integration of graphics and video is also no problem for the Amiga, except that there is not enough integration between the Amiga products themselves. There are still graphic products and imaging products, but little of both for the Amiga.

Bob Hoover from Mimetics

COMDEX/AmiEXPO Vendors

A-Squared
6114 La Salle Ave., Suite 326
Oakland, CA 94611
(415) 339-0339

Aegis Development
2210 Wilshire #277
Santa Monica, CA 90403
(213) 392-9972

Anakin Research
100 Westmore Dr., Unit 11C
Rexdale, Ontario,
Canada M9V 5C3
(416) 744-4246

B.E.S.T.
P.O. Box 230519
Tigard, OR 97224
(503) 684-6655
(800) 368-BEST

Brown-Wagh Publishing
16795 Lark Ave., Suite 210
Los Gatos, CA 95030
(408) 395-3838

Byte by Byte
Arboretum Plaza II, Suite 150
9442 Capital of Texas Highway N.
Austin, TX 78759
(512) 343-4357

Computer Systems Associates
7564 Trade St.
San Diego, CA 92121
(619) 566-3911

Discovery Software
163 Conduit St.
Annapolis, MD 21401
(301) 268-9877

Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
(415) 571-7171

Firebird Software
Distributed by:
Activision
2350 Bayshore Pkwy.
Mountain View, CA 94043
(415) 960-0410

Gold Disk
2171 Dunwin Dr., #13
Mississauga, Ontario,
Canada L5L 1X2
(416) 828-0913

Impulse, Inc.
6870 Shingle Creek Pkwy.
#112
Minneapolis, MN 55430
(612) 566-0221

Infinity Software
1144 65th St., Suite C
Emeryville, CA 94608
(415) 420-1551

Lattice
2500 S. Highland Ave., Suite 300
Lombard, IL 60148
(312) 916-1600

Manx Software Systems
One Industrial Way
Eatontown, NJ 07724
(201) 542-2121
(800) 211-0440

MicroIllusions
P.O. Box 3475
17408 Chatsworth St.
Granada Hills, CA 91344
(818) 360-3715
(800) 522-2041

MicroSearch
9896 Southwest Freeway
Houston, TX 77074
(713) 988-2818

MicroWay
Cordage Park, Bldg. 20
Plymouth, MA 02360
(617) 746-7341

Mimetics Corp.
P.O. Box 1560
Cupertino, CA 95014
(408) 741-0117

Mindscape, Inc.
3444 Dundee Rd.
Northbrook, IL 60062
(312) 480-7667

NewTek
115 W. Crane St.
Topeka, KS 66603
(913) 354-1146

New Wave Software
P.O. Box 438
St. Clair Shores, MI 48080
(313) 771-4465

Opcode Systems
1024 Hamilton Ct.
Menlo Park, CA 94025
(415) 321-8977

The Other Guys
55 N. Main St., Suite 301
Logan, UT 84321
(801) 753-7620
(800) 942-9402

Oxxi Inc.
3428 Falcon Ave.
Long Beach, CA 90807
(213) 427-2080

Progressive Peripherals & Software
464 Kalamath St.
Denver, CO 80204
(303) 825-4144

R & DL Productions
11-24 46th Ave.
Long Island City, NY 11101

Readysoft
P.O. Box 1222
Lewiston, NY 14092
(416) 731-4175

Sound Quest
5 Glenaden Ave.
Toronto, Ontario
Canada M8Y 2L2
(416) 234-0347

Southern Technologies
3212 Beltline, Suite 301
Dallas, TX 75234
(214) 247-7373

Spirit Technology
220 West 2950 S.
Salt Lake City, UT 84115
(801) 485-4233

SunRize Industries
3801 Old College Rd.
Bryan, TX 77801
(409) 846-1311

Supra Corp.
1133 Commercial Way
Albany, NY 97321
(503) 967-9075

Taurus Impex
Distributed by:
Haitex Resources
208 Carrollton Park, Suite 1207
Carrollton, TX 75006
(214) 241-8030

Very Vivid
302-1499 Queen St. W.
Toronto, Ontario,
Canada M6R 1A3
(416) 537-7222

WordPerfect Corp.
288 West Center St.
Orem, UT 84057
(801) 225-5000

Two For The Road

then talked about the products related to image processing that Mimetics produces. Mimetics does make a Genlock device for the Amiga, but Bob concentrated on their frame buffer board for the Amiga 2000 during the seminar. The main feature of Mimetics' frame buffer is that it can capture a single color frame of live video from any NTSC source. This device requires a hard drive, since one stored color frame takes up from 600K to over 1.2MB of disk space, which at the high end is beyond the storage size of an Amiga floppy disk.

Hoover stressed that this board does not store live video per say, since the Amiga is just not ready for the gigantic amounts of storage space that that would require. For example, if you really wanted to store a 30-second commercial on disk in full fidelity, you would need about a gigabyte (that's 1000MB!) of storage space. Mimetics' board deals with single images of video only. Mimetics allows you to convert the stored image to any format you want, including RGB format and IFF format. This allows you to manipulate live video images, by first converting it to IFF HAM, bringing it into a product like *DigiPaint* and manipulating it, and then converting the image back to a color frame and putting it back on the card. If an Amiga program that produces images saves more information (color-wise) than the Amiga can display, the frame buffer can take that information and display it with more color that than any present-day Amiga ever could.

As for what applications support this, Hoover said that Byte-by-Byte's rendering package *Sculpt 3-D* is compatible with the frame buffer, in addition to raw RGB image files that were created with NewTek's DigiView digitizer. With the frame buffer you are no longer limited by the Amiga's graphics modes or even by the 4096 color limit of the Amiga! The frame buffer supports up to 24 bits of RGB color information, as opposed to the 12 bits of color information that the Amiga custom chips support. Using all 24 bits of RGB color information translates to a mind-boggling 16 million colors at once. You can attempt to create video-quality animations via this method, although keep in mind that rendering programs take many hours at a time. Multiply many hours times 30 frames per second, and you are talking about over a full week's worth of rendering time just for one second on video for a normal Amiga.

For those who don't have the time to render all their images, Mimetics may soon come out with a service that allows you to send them your rendering data scene files. Mimetics will render the images, port the finished image data file to the frame buffer, and record the images on VCR tape via an animation-based VCR.

The seminars were usually very interesting, as well as being a break from the general chaos of the exhibit floor. One thing that could not be escaped were the crowds of people. The measure of a seminar's popularity was how many people were standing in the back, in the aisles, and anywhere else they could possibly fit and still be able to see, or at least hear the speakers. Although the AmiEXPO management did warn people in the program guide to get to the seminars early, I don't think they were prepared for the sardine-type state of most of the seminar rooms.

If you're interested in more detailed seminar information AmiEXPO management has made available audio tapes of each of their 35 seminars. The tapes are $9 each. For more information contact: Audio Transcripts, 610 Madison St., Alexandria, VA 22314; (703)-549-7334. ■

How to Program Your Joystick

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```
250 RETURN'BAQB
300 R=R-1:GOSUB 600:POKE V,R
    :RETURN'FMBC
350 R=R-1:D=D-1:GOSUB 600:POKE V+1,D
    :POKE V,R:RETURN'JVOM
400 R=R-1:D=D+1:GOSUB 600:POKE V+1,D
    :POKE V,R:RETURN'JVNI
450 RETURN'BAQD
500 R=R+1:GOSUB 600:POKE V,R
    :RETURN'FMAE
550 R=R+1:D=D-1:GOSUB 600:POKE V+1,D
    :POKE V,R:RETURN'JVNO
560 R=R+1:D=D+1:GOSUB 600:POKE V+1,D
    :POKE V,R:RETURN'JVMP
600 IF D=251 THEN D=0:REM SCREEN
    CHECK'FSEH
610 IF D=-1 THEN D=250'FGTF
620 IF PEEK(V+16)=1 THEN 700'FJMH
650 IF R=-1 THEN POKE V+16,
    PEEK(V+16)+1:R=88'KQMP
655 IF R=256 THEN R=0:POKE V+16,
    PEEK(V+16)+1'JRQT
660 RETURN'BAQG
700 IF R=89 THEN POKE V+16,
    PEEK(V+16)-1:R=0'JQXK
710 IF R=-1 THEN POKE V+16,
    PEEK(V+16)-1:R=255'KRHM
720 RETURN'BAQD
730 C=C+1:IF C>15 THEN C=0'GJDJ
740 POKE 53280,C:POKE 53281,C
    :RETURN'DQTK
```

END

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The second preview option allows you to bit map your text. This means the words will be shown as small blocks rather than readable text. The advantage to this display is that documents using columns of numbers or more than 80 columns can all be displayed instantly on a single monitor screen. This allows you to determine if your margins are correct and columns start and end where you intended. If you use a word processor daily, the amount of time and paper the preview option saves will pay for the word processor in the first month of use.

WordPro 128 will write files to disk using either PRG or SEQ format. Because *WordPro 128* can read or write either type file, anything you've written using another word processor can be loaded into this one, edited and resaved.

As a less than perfect speller, I am always interested in the spell-checking features of a word processor. *WordPro 128*'s speller checks a document very quickly—normally in under a minute. The document is then displayed with each word it did not recognize highlighted. You can either edit and correct the highlighted words, or if they are spelled correctly (e.g., the speller will not recognize people's names) either ignore it or add it to the existing 100,000-word list.

One thing I liked about this check which is not true of some others I've used is the sequence in which it displays unrecognized words. Rather than jump from point to point in the document to display words alphabetically, the words are displayed and edited in the sequence in which they appear in the document. This means I can read the document for contents as I correct misspelled words.

The program will let you selectively print even- or odd-numbered pages. This means you can print all the even-numbered pages of a document then flip the paper over and print the odd-numbered pages on the back. *WordPro 128* will even print using true proportional spacing (providing your printer can handle it). If proportional spacing is used, the spacing between characters is determined by the width of the character. Proportional spacing causes the printer to micro-adjust spacing between letters so all are uniform rather than snaggletoothed.

Not only does *WordPro 128* have lots of power, but it is also easy to get to that power. While I used the help screens often the first couple of days, I found myself intuitively using keystrokes by the third day, not because I have a good memory, but because the key commands make sense.

If you need a database, *FilePro 128* is simple to use yet fairly flexible—plus the data created by it can be shared with *WordPro 128*. Files are easy to create and once created can be formatted to print to screen or printer in any form the user needs including mail labels with multiple columns. *FilePro 128* can read SEQ files but uses flexible relative files to store information. This means the number of records a file can hold is not limited by the comptuer's free ROM. A file on a single disk can contain up to 4000 records. With the 1571 disk drive, files can be recalled using burst speed. Files created by the program are portable and can be used by *WordPro 128*. This provides the heavy users both power and flexibility at a reasonable price.

FilePro 128 can handle sorts using one or all of a record's fields. Each record can contain up to 20 fields with a maximum of 99 characters in each. Each field can be defined as literal (all keys), shifted (shifted keys), # (numeric), or Y/N (yes/no) conditions.

FilePro 128 is not a data manager, but instead a simple but flexible database—it allows you to store, sort and recall data. If you are a power user who needs to generate graphics or calculate math, you are out of luck with this one. But the program is sufficient for the needs of most users. Above all, this is a database you need not be afraid of; you won't spend hours deciphering.

The one fault I had with *FilePro 128* was the omission of a help screen like that employed by *WordPro 128*.

WordPro 128 was first introduced in July of 1985, retailed for $90 and contained neither the spelling checker nor *FilePro 128*. In the interim the program has gotten better and more affordable.

All this retails for under forty bucks. As if to add sugar to an already sweet deal—the program disks are not copy protected. The user is encouraged to work from backup copies and store the master disks out of harm's way. But if something does happen to the master disk, Spinnaker will replace it for only $5.

Though *WordPro 128* does not surpass all the word processors on the market for the 128, and *FilePro 128* cannot compete with the powerful data managing programs on the market, the combination produces an almost unbeatable product. It's powerful, flexible, professional and underpriced. The combination of the power and the price is pretty close to amazing. ■

The Worthwhile Imposters

Continued from page 69

Word Train: The logical supplement to the preceding units. Sorter stresses isolated character recognition. Labeler re-emphasizes locating letters combined with primary spelling skills. Additionally, Labeler's words are phonetically pure thereby relating the sound of a word to its spelling. Word Train furthers this sequence while introducing an embryonic logic, called the "One Difference Rule."

Word Train's props consist of three delivery trucks, each carrying one three-letter word. Below these trucks waits a locomotive with three empty box cars. The train's locomotive exhibits a three-letter target word on its side. The lesson's object is to transfer the trucks' words into the train's boxcars according to a preset rule.

The student chooses a word from one of three trucks that has two of the same letters and one different letter than the locomotive's word. This word is loaded onto the first boxcar. The second boxcar receives a word with one letter different than the first car's. This same sequence repeats for the third car.

Since three letters must be evaluated to reach a correct answer, this exercise demands heightened decision making from the student. As in all the *Reader Rabbit* exercises, errors are treated lightly.

Matchup: A multi-part exercise emphasizing concentration, memory and spelling skills by matching pairs of cards. The cards are divided into three major groups: picture to picture, picture to parts of words, and words to words.

The first screen presents the pictures and names of the items comprising the topic. Next, 12 cars are presented face down. After turning cards over, one at a time, the student must recall the locations of two matching cards.

Matchup's related to several popular table games that offer more or less the same challenge. The advantage of the computerized version lies in its ability to effortlessly change cards to reinforce specific skills. The challenge level can be modified to reflect the age and skills of the child by choosing another group of cards.

In addition to the intrinsic educational value these programs provide and their underlying promise to entertain, students will hone their computer proficiency skills. Granted, the computer is not a substitute for professional instruction. When combined with first-rate software, however, a computer can provide the reinforcement, the extra edge, a child needs to excel. ■

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just to keep you from getting too cocky at the controls.

First the goal of the game at the beginning of play is an absolute mystery. You only know that you must attempt to appease Zeus by completing a series of twelve deadly deeds. The specific actions these tasks require will only be revealed at a personal visit to the Oracle of Zeus, a sacred holy ground where the heaven's powerful father outlines, in pieces, the different steps of your quest. When you've completed twelve of these mini-missions, each time returning to the Oracle to report your progress and learn of the next phase of your trial, you will have proven your worth to the gods, receiving immortality as your everlasting reward.

To help you get around, a handy map has been provided, with all the major cities and landmarks pinpointed. But knowing where to go and actually getting there are two different stories. Sixty-one rooms have been provided for exploration, taking you across forests, over mountains and around oceans to meet everything from poisonous snakes to punishing six-handed giants. Gold must be gathered, equipment purchased, and enemies overpowered as you struggle to survive the elements created and placed by the playful yet deadly whims of the gods.

Like "Ali Baba," this adventure's puzzles and pitfalls are designed to put your strategic skill and reasoning ability to the test. Success will take a combination of character strength and player smarts. It's a satisfying and challenging blend, with fans of Greek mythology getting an extra charge, since the settings, characters and quests are all strung along a familiar Homeric thread.

Conclusion

Although a bit simplistic by today's standards, the graphics in both games are clear, colorful and functional. Randomized events keep the adventures fresh with each replay, and both employ a "save" feature, which allows you to take periodic breaks without sacrificing progress.

Even without the luxury of spectacular visual enhancements, these adventures still stand strong, providing hours of captivating and exciting game play. The package has certainly aged well—a testament to Stuart Smith's genius as a fantasy weaver and game designer. If you were unfortunate enough to miss either of these challenges the first time around, don't make the same mistake twice. Here they are again. Enjoy. C

Continued from page 40

new to adventure games and another area in which *Arazok's Tomb* excels.

The sound effects and speech are especially good in *Arazok's Tomb*, and both are optional. However, I would recommend giving the game a listen, for the steady tick of the clock and speech of the characters you come across broaden the dramatic aura of the game.

So far, I've only told you about the good things in *Arazok's Tomb*. There are two bad points that must be mentioned. First the parser that the adventure uses is terrible. The game doesn't understand simple words like CUT, PRESS and TOUCH, let alone any four-letter words (I had to try them—it is, after all, an adult adventure). Also, the interpretation of some commands, such as PUT ELIXIR IN CHALICE and others, is questionable.

> When I'm looking straight down the mouth of a giant snake on my screen and his tongue is moving, it sends a chill down my spine.

The other gripe I have is the lack of specific instructions, particularly for saving and restoring games. Only through trial and error did I find out that you are supposed to use the original disk as a save disk for games in progress. There is space reserved on the disk for a few games. This fact is *not* mentioned in the manual, and I am very hesitant to write anything to the original disk, after which it can't be returned to its original state. Some clearer instructions and some reorganization of the manual are in order here.

Still, *Arazok's Tomb* is an excellent foray into the darker realms of existence. Combining spells, general magic, evil creatures, a castle, island and (perhaps?!) even Arazok himself with the excellent use of the Amiga's powerful operating system, *Arazok's Tomb* kept my imagination busy for many, many hours.

As any avid adventurer can acknowledge, finishing a game leaves you with the feeling that you can conquer the world. In a way, after completing a quest or discovering the secrets of some long lost buildings or lands, you actually have conquered a "world." In the case of *Arazok's Tomb*, your adventure may have even greater importance because of the classic struggle between good and evil. C

Continued from page 22

atmosphere of the game. Briggs included her family in the game as different characters and remarked that the father in the story has a real-life counterpart in her grandfather. Other names that she used for people, places and things are food-related for no apparent reason other than Briggs thought it was cute and funny: Andy Crulley (crueller), Lafond Deux (fondue), etc.

The most interesting tale Briggs has for naming and characterization involves the handsome pirate, Nicholas Jamison. She passed out a survey to all the women at Infocom and asked them to describe the man of their dreams and to include specific details such as hair color, eye color and movie star example. Briggs told me that "the overwhelming answers were blue eyes, dark hair and a Mel Gibson-type figure and personage. 'James' was the dominant name chosen. I thought that 'James' was too simplistic for a hero's name and that it was already overused, so I stuck a 'Nicholas' in front of it, and the last name became 'Jamison.'"

Included in each package is a velvet reticule that contains the original note from Jean Lafond describing your father's condition and a 50 guinea note with which to purchase new clothes on St. Sinistra. *Plundered Hearts* keeps with the grand tradition of interactive fiction and leaves little to be desired except another game from Briggs.

The most interesting aspect of *Plundered Hearts* for me was trying to think like a woman. The female players of the game will have no problem. In trying to think like a woman, I typed in "SCREAM" and the game responded, "Papa always says, 'Action, not reaction, girl!' " Other times, in true male form, I tried doing things that were deemed "unladylike" and "impossible" because of the character's strength. Training your mind to a different mindset is a refreshing experience in itself.

Plundered Hearts outdid my expectations for the game. After finishing the game and bringing myself back from the seventeenth century, I felt like I had just finished a novel that I had written myself through my actions. Briggs' careful selection of words and knowledge of the time period helped immensely in my enjoyment of the game. Don't let the fact that the main character is a woman scare you away! *Plundered Hearts* won my respect by not relying on this gimmick and delivering a challenging adventure with which to pass the time.

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caching routines are now totally separate from the user interface. When you load *Facc II* you won't see any window or other appearance of a user interface. *Facc II* contains only the vital caching routines, and once you load them in, *Facc II* buries itself in the operating system, never to be seen again.

So how do you control *Facc II* directly? The real answer is that you don't. Once you have executed *Facc II*, you then load one of two user interfaces. These allow you to talk to *Facc II* so you can control the cache. The simpler user interface is called SatisFacction. SatisFacction is provided so that people who want the original *Facc* user interface to appear in *Facc II* can do so. There is a price for this simplicity—you are not able to access *Facc II*'s many new features via SatisFacction.

The more comprehensive user interface provided in *Facc II*, called Facction, allows you complete access to all of *Facc II*'s new features. When you load up Facction, you will notice that the top part of its window looks identical to SatisFacction's (and to *Facc*'s), but there are several new gadgets and windows in the bottom part of the Facction window.

One improvement in *Facc II* is that it now understands the structure of an AmigaDOS disk. It knows that certain disk blocks containing information about directories, file headers, file lists are very important, and that these blocks will tend to be accessed much more frequently that disk blocks that contain only file data. If you choose, you can tell *Facc II* to give special preference to cache buffers that contain one of these special disk blocks. When *Facc II* has to throw away a buffer that is not empty, it will always select one that contains file data disk blocks first and try to save all the buffers containing special disk blocks. This tremendously increases performance and makes each buffer allocated to *Facc II* via Facction (or SatisFacction) save even more time and wear and tear on your floppy drives than *Facc* could.

Another big improvement is that *Facc II* supports ASDG's own Low Memory Server (LMS) program (reviewed in the December 1987 "Amiga Public Domain" column). Since *Facc II* is a program that can never have enough memory (the more buffers you allocate to *Facc II*, the better it performs), you may be tempted to give *Facc II* all the free memory you have. But if another Amiga program really needs some memory, wouldn't it be nice if *Facc II* would automatically give up the buffers that it doesn't really need so that this other program can function? Now that *Facc II*, via Facction, can support the LMS, this is possible. What is even better is that via Facction, you can define a low memory condition (in terms of both free Chip memory and free Fast memory). This low memory threshold option is very useful, since some Amiga programs might act rather piggy when they ask for more memory from the system. This way you can make sure that *Facc II* acts intelligently concerning whether it should give up buffers. (The LMS program does not have any intelligence, rather it is simply an alarm that gets triggered any time an AllocMem() call fails anywhere in the system.)

Facc II also offers the option to turn write retention on or off. *Facc* always retained blocks that were written, but now you can click the Write Retention gadget in Facction to choose for yourself. For example, if you are using a database program and have just saved a record to disk, you will usually be accessing that record later. It would make sense to tell *Facc II* to save those buffers. On the other hand, let's say you were in AmigaDOS backing up an important disk file (using the standard Copy command). Since you don't want to touch the backup, but just access the original file, you should tell *Facc II* via Facction's Write Retention gadget not to save the buffers that belonged to the backup.

There are many other new features in *Facc II*, like the ability to freeze the cache contents at any time or dump the entire cache or purge all the buffers that belong to a particular floppy disk. You can also type in the number of buffers you want without using the Less and More buttons via the Direct Dial bar in Facction.

Facc II also has a major bug fix, in that it will not interfere when you format a floppy or perform a diskcopy. *Facc* was occasionally destructive when formatting or disk copying was taking place, and could ruin the contents of the destination disk or cause an invalid format to appear to be successful.

There is also one other major enhancement in *Facc II*, in that if you use Facction, you can now access all the features of *Facc II* from CLI! All you mouse-haters and touch typists can use *Facc II* just as conveniently as everyone else.

Facc II retails for the same low price as *Facc*—$34.95. If you don't own a hard drive, and especially if you have two or more disk drives and a decent amount of memory, you'd be crazy not to use this program. The amount of time saved by using *Facc II* is tremendous!

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ture's real authors. According to the pull-down game credits on the Amiga version, *Colossal Adventure* was "designed and programmed by Mike, Nick and Pete Austin." Now I know Crowther and Woods let their game slip into the public domain, so they don't have any rights to it, and I'm aware that Level 9 doesn't *have* to give them credit. But dozens of other versions and rewrites of the game have done so, and some even pay them royalties.

The text passages in *Colossal Adventure* read like those of the original, but puzzles have been reworked to bring the top score to 1100 points. *Adventure Quest* is a sequel of sorts, beginning as "you stand at the end of a road, outside a small brick building" but taking place hundreds of years later. As an apprentice magician of the Wizards Guild, it's up to you to seek out the Demon Lord in his Black Tower and slay him in order to save the land. *Dungeon Adventure* takes place the day after you polished off the Demon Lord, when you realize the Black Tower's former tenant left behind a store house of treasure and decide to retrieve it.

Each of the games is independent of the others, so they may be played in any order. (On an Amiga you can even play two or three at once.) They all employ the excellent parser introduced in the U.S. in *Knight Orc*, which even adds RAM save and restore features for Amiga Adventurers. Despite the super-intelligent parser, the game itself doesn't have much to say. Upon examining most objects, I was enlightened with the likes of: "Totally irrelevent" (sic) and "Unimportant."

Graphics are fast-loading on most machines and load into RAM on the Amiga. But the graphics are fantasy worlds away from those seen in previous Firebird games. They look kind of blocky and demonstrate little detail or style. Amiga owners will be disappointed to learn they'll view virtually the same illustrations seen in the 64 version, for they seem to have simply been ported over instead of redrawn to take advantage of this and other computers' more powerful graphic and sound capabilities. These machines also offer voice-synthesized narration of each scene's description and your commands.

So unless you just want to see what an old British adventure game looks like with new graphics, I suggest you skip *Jewels of Darkness*. The only real jewel in *Colossal Adventure*—and you can get authentic versions for the Amiga and 64, one that actually give royalties as well as credit to Crowther and Woods—in Electronic Arts' *Golden Oldies Volume One*.

An Amiga Best Quest

A few weeks after turning in my selections for Best Adventure and Role-playing Games of 1987, I discovered one that would certainly have made the list of Amiga titles had I seen it in time—*Faery Tale Adventure*. It's not just another play-alike whose author was content to emulate the style of *Ultima* or *Wizadry*. Instead, David Joiner came up with a whole new game system especially designed for the Amiga. (MicroIllusions says a 64 version is in the works, and I'll report on the conversion as soon as it shows up.)

Faery Tale is a one-character role-playing game with a twist. You begin as one of three brothers who must defeat an evil necromancer and recover a magic talisman in order to save the medieval land of Holm. The twist is that after your character is killed four times, you begin anew as another of the brothers rather than have your character resurrected in a temple. Each brother has different ratings in traits such as bravery, luck, kindness and vitality.

The interface is equally innovative, allowing you to use joystick, mouse or keyboard to move and make decisions. Animation and music is superb, and there's a vast array of magic items and weapons to fool around with while being attacked by gangs of roving Mages, Skeletons and other incredibly detailed and animated creatures.

Clues of the Month

Faery Tale Adventure: Don't let your character get killed! Kill all the monsters! Get all the gold! Just kidding. I have only played this long enough to come up with a trick that's useful in the early part of the game, so 64 gamers just starting on it will find this more helpful than Amiga owners who've been struggling for months. To get a decent weapon, wait until a gang of monsters attacks, then use umwnn and loot the bodies. And don't stray too far from the first town until you've got a good supply of food and light.

Maniac Mansion: To enter the basement, have one kid rwnn the ictiqzng pgygn and another one ready to enter the door when it opens. To get past the tentacle, fill the glass jar with ycvgt from the hcwegv. Go upstairs and give him all the food from the fridge and the shelves, then the ycvgt. In order to find the combination to the safe, you need to use the telescope and turn it to the tkijv. (To decode clues, count two letters back.) ■

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limit to the number of ways you can play a scenario. A game like *Battles in Normandy* keeps these things in mind.

There are four turns in each day: a.m., noon, p.m. and night. For the most part, no fighting should be done at night because this type of combat takes a heavy toll on the soldiers in the battalions. There are a maximum of 63 turns, so that the most a scenario can last is 16 days, with all action ending in the p.m. turn of the last day. Because of this restriction, *Battles in Normandy* challenges a player to action immediately and doesn't bore him with long, drawn-out battles.

The design option included in *Battles in Normandy* leaves nothing to be desired. The options even allow you to modify a scenario or switch sides in the middle of playing one. Your modifications take precedence over the original game on the following turn. A complete description of all choices available in the design module is in the manual, and you can use them at your own pace.

The screen graphics are packed with information about your troops and should be understood before play. To help with this understanding and others, *Battles in Normandy* includes a full tutorial that walks you through a few turns of the Sword scenario, detailing what you need to do. The map on the screen is divided into hexagonal locations that indicate different terrain types and players' units. The on-screen map is detailed enough to clearly see which unit is which and where you can move. The screen contains only a portion of the available playing area, as indicated in the drawing in the lower right-hand side of the screen.

As mentioned already, the manual and command cards help dramatically in playing *Battles in Normandy.* Another feature that aids a player is the color map that unfolds to show the entire Normandy peninsula, divided into hexes as it is in the game. The areas that each scenario covers are indicated on the map as well as the terrain type. You will see that a lot of area on the peninsula has been left absent from scenarios for you to create your own.

Battles in Normandy runs the gamut of war games. History can be duplicated if so desired, or you can sit back and just watch the game play itself through a scenario after varying factors. This is the best way to see how a scenario works—use it to your advantage. In any case, pick up *Battles in Normandy* and see what a war game is supposed to be like—all contained on one disk. ■

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Connecting a Hard Drive

It seems Commodore never anticipated that 64 and 128 end users would need or want to connect a hard drive to those computers. (Back in the early days of the 64, hardware and software developers believed the homely cassette recorder would be the storage device of preference.) Because of this oversight, connecting a hard drive is not as simple as just plugging it in. An obvious solution is to either use the serial (disk) port or daisy chain the hard drive to a floppy drive. This solution will work, but because data must still be bottlenecked through the same data bus, speed gains of more than five times those of the 1541 drive are difficult.

The Lt. Kernal avoids this bottleneck by using the 64's user (game) port instead. A variety of bus detours (some more successful than others) are used by other hard drive developers in order to increase the exchange rate.

Because speed is essential if a drive is going to be useful, I suggest you find out how the drive physically connects to the computer, and the unit's byte transfer rate (size without speed is a waste) before buying. The Lt. Kernal requires you open your computer (voiding the warranty) after which you must connect a couple of wires to specific chip pins in the 64 installation. In the 128 installation you must remove and reinstall one microchip as well as connect two jumper cables.

I must admit I was hesitant to attempt these changes on my own, but after I read the instructions (complete with diagrams), both operations were painless and safe. The biggest danger with installing a unit yourself appears to be causing a discharge of static electricity (which could paralyze a chip) or bending a chip's connector. The instructions tell how to avoid both. I've made the connections on both the 64 and 128 without a hitch, and as my wife says, "If Gary can do it, it can't be that difficult."

The Lt. Kernal uses an adaptor box (which plugs in the serial port) and a cable to connect the two. If you need to move the units, you simply unplug the adaptor box; there's no need to reopen the computer. This connection scheme allows the unit to transfer bytes at rates up to 65,000 per second. You do lose the use of the computer's game port with this set up. The wire connection allows the unit to intercept DOS commands immediately upon startup rather than having to load a software wedge each time you turn the unit on. As a result, the marriage between the computer and drive appears to be as harmonious as if the computer had been designed to recognize a hard drive all along.

Do's and Don't's

A good hard disk can spin at 3600 rpms and transfer data at the rate of 65,000 bytes per second. Because of this it is essential the drive either be well ventilated or have its own cooling fan. Microchips (whether in a computer or a peripheral) are more prone to misbehave if they are allowed to heat up, so save yourself some grief and keep it cool.

Along with heat, hard drives must be protected from dirt and sudden jolts. Because the head glides so close to the surface of the platter, it is imperative the environment around it be clean—even material such as cigarette smoke can interfere with the head reading or writing data to the platter. To help eliminate this danger, most developers of hard drives seal the moving parts of the drive to prevent contamination.

Because the drive's four heads come so close to the surface of the rapidly spinning platter, any sudden jar could cause the head to scrape the surface with destructive consequences. Anyone who has cringed at the sight and sound of a stereo's needle skipping destructively across the surface of a favorite LP can begin to visualize the danger of a drive's head bouncing across the surface of a platter spinning at 3600 rpms. Believe me, you don't want to experience the destruction that can cause to your valuable files.

> The most boring yet most important chore you must faithfully perform as a hard drive user is *backup your important files.*

To minimize the danger of a jolt, the drive should be located on a solid surface. If the unit needs to be shipped or just moved from one side of the room to the other, the heads should first be parked in a safe position. Along with the expanded DOS each drive has a command to do just this.

On the Lt. Kernal the command is called SHIP. Before you move the unit, you simply type SHIP, and the heads retract safely away until another command

is given. The SHIP command is so simple to execute, I try to remember to park the heads every time I finish with the unit. If you have anything comparable to a bouncing six-year-old boy around your unit, I suggest you do the same—better safe than sorry.

As more people add hard drives to their systems, you can look for prices to decrease.

The most boring yet most important chore you must faithfully perform as a hard drive user is *backup your important files*. Even the most dependable drive may some day fail, and without a backup copy of your programs stored safely away, you face weeks of work to reconstruct them.

Let me add a horror story to emphasize the importance of protecting your investment. A professor from the local university came to see me one day. She was almost in tears. She had just spent an inspired year writing and had nearly finished her first novel. She had saved every word of it on her hard drive but foolishly had never bothered to backup any of it. No, the hard drive did not fail, but when thieves broke into her apartment one night, they took her system and along with it the novel. Her insurance replaced the system, but nothing will replace the novel. She is out a full year of writing which she may or may not be able to reconstruct, all because she didn't backup the novel.

Why are Hard Drives Expensive?

That's a fair question. In a world where we have become accustomed to computers priced like disposable pens, the price of any hard drive for the 64 or 128 computer will sober a prospective buyer. The Xetec Lt. Kernal retails for close to $900, which is about mid range for a 64 drive. For most of us, coming up with that much cash is not simple. You can justify some of the charge by comparing storage cost byte against byte. If you normally pay $2 per floppy disk, you can justify the first $236 dollars of the price, because the 20MB drive will eliminate the need to purchase 118 floppies.

But the only way you can fully recoup the cost is with your time. If your time is valuable, a fast hard drive (properly installed) can save you hours of working time each week in loading programs and recalling and storing files.

As more people add hard drives to their systems, you can look for prices to decrease. At this writing, relatively few 64 and 128 owners use hard drives—that is certain to change. Since its introduction, the price of the 1541 disk drive has dropped (because of more units sold) from around $400 to close to $150, the same should be true of hard disk drives.

Another cost depressing factor will be the introduction of competition in the market. The already huge base of potential buyers increases each time another 64 or 128 is sold. This continually growing market has not gone unnoticed by the hard drive industry. Because of that, we can all expect to see more, better and less expensive hard disk drives on the shelves in the future.

Who Needs a Hard Drive?

Separating our needs from our wants is often difficult. I've always found when I wanted something long enough I could convince myself I needed it. When it comes to hard drives it is easy to fall into this same want/need trap. I can justify the expense and luxury of a unit because of the size of my software library and the hours I spend each day using productivity software to collect, create and store files. The disk pays for itself with the time it saves me locating and replacing floppy disks. It also helps me keep my work area less cluttered and frees space on my shelves for things other than program boxes.

If you are using your 64 or 128 for business, I'm sure you can justify a unit even more easily than I can. Any electronic bulletin board sysop would find it impossible to operate without a hard drive. Program developers, especially those using compiled languages, will find a hard drive's speed and size a godsend. The same is true for users of large databases. Also, anyone using the 128 in CP/M mode (which relies heavily on disk access) is a good candidate for hard drive ownership.

But if your software library is small or you use your system primarily for entertainment, buying a hard disk drive would be a mistake. Hard drives are designed for business applications.

Knowing whether you need or simply want a hard disk drive shouldn't be a difficult question to answer. This isn't a tool to own simply because the fellow down the block has one. For speed and size, however, there's no substitute—and that's the hard truth. C

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veats to consider. A presentation of any length requires substantial amounts of memory. A 320 X 200 32-color image consumes about 40,000 bytes of memory. On a 512K Amiga, only about eight to ten images could be held in memory at one time. Consider also that digitized sound files and large point fonts could consume upwards of 20,000 bytes each. While *The Director* includes commands to free unused memory when no longer needed, it is safe to assume that at least one megabyte would be a practical requirement, and this figure applies as well to the computer that is showing the filmstrip. Although the images and fonts can remain on a diskette until actually needed, continuous loading during the presentation prohibits fast transitions.

The process of putting a script together is often tedious and time consuming. You must constantly flip between your text editor and the CLI screen to run *The Director* to see what your script actually looks like and to make the proper corrections. Unless *The Director*, your text editor, and your script are loaded into RAM (which again consumes a significant amount of memory), the process becomes slower, as those programs must be reloaded each time they are run. Errors in your script are succinctly reported on the CLI screen. On several occasions (while implementing erroneous or invalid commands), my Amiga reported a software error, gave me a Guru and reset itself.

Finally, pre-production planning is a must! An effective filmstrip which utilizes blits, dissolves and wipes must use images of the same resolution and color palette to operate properly. The dissolving of a 32-color image onto a HAM image more than often will produce undesirable results. More importantly, placing portions of different images on a single screen absolutely requires such uniformity. As a result, readily available images and artwork which contain different palettes cannot as a practical matter be used with most of the special effects commands.

Despite these minor drawbacks, *The Director* is an exciting, unique program which allows almost anyone with imagination to produce stunning, professional graphic presentations. The program is not copy protected, and for the price, it is likely to become a classic to accompany *DeluxePaint II* on your library shelf. If an Oscar were to be presented for Technical Excellence in Amiga Graphics, the winner would certainly be (the envelope, please)—*The Director*. ■

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gramming sessions, he may have five versions of his main source file, a number of backups of those files, edited header files, old header files, a number of superfluous notes and bits of code that didn't work and the startup code files. Soon a directory of the disk looks like a collection of files that, given enough time, could add quite a bit of confusion to the development cycle.

If that same programmer had created directories on the disk to hold each set of files, it would be much easier to determine which files belonged together. I suggest creating directories called SOURCE, HEADERS, STARTUP and MISC. Then, the program hunks would be placed into SOURCE, the header include files would be placed into HEADER, etc. Now, a glance at the root directory listing will tell me what's on the disk without my having to decipher the messy listing that exists without the directories.

There is another advantage to neat disk organization: *speed*. Each time you call up a directory, the DIR command has to gather all of the hash table entries for all of the files in the current directory. If you are working from a fixed disk, as I mentioned above, this operation could take quite a while. By rearranging my friend's file collection into 11 different directories, each with any necessary sub-directories, we decreased the time required for a DIR to under five seconds. Quite a plus since it previously took over 70 seconds.

There are a number of directories that AmigaDOS requires for proper operation of your Amiga. The directories that you should see on an unmodified Workbench are C, L, S, T, LIBS, DEVS, FONTS, TRASHCAN, SYSTEM, UTILITIES and EMPTY. Of these, C is where AmigaDOS looks if it can't find the program file in your current directory; L is where device-specific handlers, like the disk validator and RAM handler, are stored (as well as overlay files for some compilers); and S is where the system looks for the Startup-Sequence file and for files to be EXECUTED if they aren't found in the current directory. The DEVS directory contains the device driver for your printer, the System-Configuration (or Preferences) file, keymaps for alternate keyboard setups, the clipboard device driver and the MountList and drivers for any additional hardware you may have added to your system. FONTS, as I mentioned above, contains the information for the various fonts that you have available. The LIBS directory contains the various ".library" files required by the Workbench for icons, the Translator, specialized math calls and is also a good place to keep your ".bmap" files if you are a power AmigaBASIC programmer. The T directory is used by certain programs and editors to store segments of code or data to allow you to restore a file in case of problems. It is also used by the Clipboard for temporary storage.

The other directories, SYSTEM, UTILITIES, TRASHCAN and EMPTY exist simply as additional storage areas on the disk to help reduce the clutter in the root directory. They aren't used by AmigaDOS except for specialized functions. The directories that are absolutely required on a bootable disk are L, LIBS and DEVS. The others are only required dependent on the application being run from the disk. *ProWrite*, for example, would also require the FONTS directory for proper operation.

AmigaDOS Lends a Hand

Now that you have rearranged your files into the various sub-directories, the first problem that comes to mind is—"But now I have to CD every time I want to use a program in a different directory." Well, that is one answer. A better answer, however, is to use the AmigaDOS command PATH. The Syntax for the PATH command is: PATH [pathname] [ADD] [SHOW] [RESTORE] An example for getting to *ProWrite* might look like: PATH DH0:PROWRITE ADD.

Now, assuming you had set up the *ProWrite* directory properly, no matter where you are at any time, you can access *ProWrite* by just typing its name. This is similar to what AmigaDOS does for you at startup—your PATH is set to the current directory and the C: directory. The other options, SHOW and RESTORE, are issued without any path names. For example, to reset your PATH to the system default, you would issue the following:

PATH RESTORE Using PATH SHOW is the same as just typing PATH; the SHOW is implied if there are no arguments. Also, if you just enter: PATH [pathname], you will get the same effect as using the ADD option.

Hierarchy *Isn't* Anarchy!

If you follow the simple suggestions made here, you should find that disk management will become less of a burden. If you dread the task of reorganizing your disks, I suggest that you look for one of the public domain or shareware disk utilities that are available. You can probably find one through a local bulletin board or user group that supports the Amiga. ■

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screen is just as squashed as your printed picture. From then on, anything that you draw on the screen will be duplicated identically on the printer.
James Williamson
Marietta, GA

***Multiplan* miracle:** I have used the Epyx version of Microsoft's *Multiplan* for a long time with my Commodore 64, and have found it to be one of the most useful programs I own.

When I recently got a 128, I was eager to see how *Multiplan* looked on its 80-column screen. It was wonderful to see twice as many columns as before, but to my pleasant surprise this wasn't the best improvement with the 128.

Multiplan runs much faster on the 128 than it does on the 64, and the difference is quite noticeable, even when working with fairly small spreadsheets. Not only that, but switching to 128 mode eliminates all those accesses to the disk drive. In fact, with the 128 you don't even need to transfer the MP.SWAP file to your data disks!
Kathleen Mead, CPA
Westerville, OH

All about rounding: When programming business or mathematical applications in BASIC, the subject of rounding comes up in several different ways. This tip gives methods of dealing with two of them.

First, the computer itself sometimes introduces small errors that need to be rounded off by the program. This problem occurs because the computer does its math by flipping bits in binary; to work with decimal numbers, it converts them to binary representation, processes them, then converts them back to decimal form. During the binary processing, the computer sometimes needs to do rounding or truncating of its own. When this happens and the binary is converted to decimal, the result is very slightly different than what we would expect.

To see this error creation in action, execute this line then watch your screen:

```
FOR X=1 TO 15 : PRINT SQR(X*X)-X : NEXT
```

Mathematically, the square root of X times X is surely X. And X minus X is surely zero. But as you can see on the screen, the computer introduces some tiny errors. For more of the same, execute this:

```
100 FOR X=6 TO 12 STEP 0.1
200 PRINT X
300 NEXT
```

As the numbers flash by on the screen, you'll easily see the errors in the eighth decimal place.

One way to eliminate this type of error is to pass X through the STR$ and VAL functions. You can see the effect by adding this to the program above:

```
110 X$=STR$(X) : X=VAL(X$)
```

The second angle on rounding comes when the logic of a program requires that a number be rounded, even though that number is perfectly accurate. For example, when a program dealing with dollars and cents encounters a result with three or more decimal places, it's usually desirable to round that result to two places.

There are many routines to do this sort of rounding. The one contained in the accompanying listing uses a user-defined function, FNR, to do the rounding.

The function definition is contained in line 120. It must be executed before the rounding routine will work. N1 is the number to be rounded, and N2 is the decimal representation of the closest power of ten to be rounded to. If N2=0.01, the function will round to the nearest hundredth. If N2=100, the function will round to the nearest 100.

Lines 160-200 let you test the routine for various values of N1 and N2.
Johnathan Greer
Tyrane, PA

```
100 PRINT"[CLEAR]ROUNDING NUMBERS -
    J. GREER"
110 :
120 DEF FN R(N1)=INT(N1/N2+0.5)*N2
130 REM N1=NUMBER TO BE ROUNDED
140 REM N2=WHAT TO ROUND IT TO
    : .01 ETC
150 :
160 PRINT
170 N1=0:INPUT"[SPACE4]
    # TO BE ROUNDED";N1
    :IF N1=0 THEN END
180 INPUT"ROUND TO (.01 ETC.)";N2
190 PRINT"[SPACE3]# AFTER ROUNDING=";
    FN R(N1)
200 GOTO 160
```

64 Program Pauser: Type this in and run it, and you'll have a convenient way to pause most BASIC and many machine language programs, not to mention listings to the screen.

After you've run the program, load another one that you'd like to experiment with. When you're ready for a pause, just hold down the left SHIFT key (or the SHIFT LOCK key), then tap the CTRL key and everything will stop. The screen border will turn light grey to alert you to the paused condition. Releasing the SHIFT or SHIFT LOCK key will resume execution.

Because the CTRL/LEFT SHIFT combination is seldom used in normal operation, there's very little chance of your inadvertently pausing your main program.

Using the STOP/RESTORE key combination will remove your ability to pause programs. To reactivate it, enter SYS679.

After you've saved this program and are familiar with how it works, you might want to add a NEW statement at the end of line 40. This will remove the BASIC loader once the utility is active.
Jason D. Clark
Las Vegas, NV

```
10 REM 64 PROGRAM PAUSER - JASON CLARK
20 REM CTRL+LEFT SHIFT TO PAUSE
   PROGRAM
30 FOR J=679 TO 746:READ X:POKE J,X
   :NEXT
 40 SYS 679 : REM ENABLES THE PAUSER
 51 DATA 173,020,003,141,202,002,173,
    021
 52 DATA 003,141,203,002,120,169,002,
    141
 53 DATA 021,003,169,192,141,020,003,
    088
```

```
54 DATA 096,173,141,002,041,005,201,
   005
55 DATA 240,003,076,049,234,238,032,
   208
56 DATA 169,253,141,000,220,173,001,
   220
57 DATA 041,128,240,244,169,255,141,
   000
58 DATA 220,206,032,208,169,000,141,
   141
59 DATA 002,076,201,002
```

128 editing precaution: An advantage of the 128 is that BASIC retains its variables when the program is changed. This lets you stop your program, edit it, then continue where you left off with the GOTO command. Needless to say, this is impossible with the 64 and most other computers.

There's a downside to this advantage, however. If you are in a subroutine and do this editing in the main program, the location of the GOSUB command may get changed. When your restarted program attempts to execute the inevitable RETURN, it will attempt to return to the wrong place, with unpredictable results. So use this feature with care.

Ian Adam
Vancouver, B.C.
Canada

128 Sprite Rotator: This program can speed up your sprite editing sessions. It lets you design sprite 1, then rotates that sprite in 90-degree steps and puts the result into sprites 2, 3 and 4.

When you run it, you are immediately presented with a SPRDEF screen. (Your *128 System Guide* contains detailed instructions for using this automated sprite editing screen. Look in the index under SPRDEF.) Select sprite 1 and design your sprite, being careful not to use the three rightmost columns (there's no place to rotate them to). When you're finished designing your sprite, press SHIFT/RETURN, and the 128 will prompt you for another sprite number. Press RETURN at this point, and wait for 128 Sprite Rotator to do its work.

When it finishes rotating and transferring the sprites, the program will put you back into SPRDEF mode, where you can examine all four sprites and work on them some more if you'd like. Exit SPRDEF just as you did above, and the program will give you a chance to move your sprites around using a joystick plugged into Port 2.

Finally, the program lets you save the sprites under any name you choose. To use them later in your programs, just execute

BLOAD "filename",B0,P3584

where "filename" is the name under which you saved them.

John Mahowald
Minnetonka, MN

```
100 N$="128 SPRITE ROTATOR-JOHN
    MAHOWALD
110 FOR J=1 TO 8:SPRITE J,0:NEXT
120 PRINT"[CLEAR]";N$:PRINT"[DOWN2]
    PRESS SPACEBAR TO BEGIN..."
130 GET A$:IF A$<>CHR$(32) THEN 130
140 DIM A(21,21):COLOR 0,1:COLOR 4,1
    :SPRITE 1,0,2:PRINT"[CLEAR]"
    :SPRDEF:SPRSAV 1,S$
150 GRAPHIC 1,1:GSHAPE S$,1,1,0
160 CHAR 0,1,4,N$:CHAR 0,1,6,
    "PLEASE STAND BY (30 SECONDS)..."
170 FOR Y=1 TO 21:FOR X=1 TO 21
    :LOCATE X,Y:A(X,Y)=RDOT(2):NEXT
    :NEXT
180 FOR Y=1 TO 21:FOR X=1 TO 21
    :DRAW A(Y,22-X),X+30,Y:NEXT:NEXT
190 FOR Y=1 TO 21:FOR X=1 TO 21
    :DRAW A(X,22-Y),X+60,Y:NEXT:NEXT
200 FOR Y=1 TO 21:FOR X=1 TO 21
    :DRAW A(Y,X),X+90,Y:NEXT:NEXT
210 FOR N=0 TO 3:SSHAPE S$,N*30+1,1,
    N*30+22,22:SPRSAV S$,N+1:NEXT
220 SPRDEF:MOVSPR 5,160,100:SPRSAV 1,5
    :SPRITE 5,1,2
230 PRINT N$:INPUT"[DOWN]
    WANT TO USE JOYSTICK (Y/N)";A$
    :IF A$<>"Y" THEN 270
240 PRINT"[DOWN]JOYSTICK MOVES SPRITE,
     FIRE BUTTON QUITS"
250 J=JOY(2):IF J>0 AND J<9 THEN
    SPRSAV (J+1)/2,5:MOVSPR 5,
    J*45-45#5:ELSE MOVSPR 5,0#0
260 IF J>127 THEN GRAPHIC 0
    :ELSE GOTO 250
270 INPUT "[DOWN]SAVE SPRITES (Y/N)";
    A$:IF A$<>"Y" THEN END
280 F$="":INPUT "[DOWN4]FILENAME";F$
    :IF F$>"" THEN BSAVE ""+F$,B0,
    P3584 TO P3840
```

128 TEMPO Table Maker: When working with music in BASIC 7.0, the TEMPO statement is used to control how fast the notes are played. The accompanying program prints a table showing the actual playing times for whole notes through sixteenth notes, for TEMPOs from 1 to 60. The printout takes 60 lines, so be sure to start with the printhead near the top of the paper.

If you wonder about faster tempos, just make the appropriate change in line 130. The values of T following the FOR statement will control the range of tempos you print out.

Lucy S. Terrier
Alton, IL

```
100 REM 128 TEMPO TABLE MAKER
110 OPEN 4,4:CMD 4:PRINT,
    "NOTE DURATIONS IN MILLISECONDS"
120 PRINT"TEMPO[SPACE4]WHOLE[SPACE3]
    HALF[SPACE3]QUARTER[SPACE2]EIGHTH
    [SPACE2]SIXTEENTH"
130 FOR T=1 TO 60:PRINT T;"[SPACE3]";
    :IF T<10 THEN PRINT" ";
140 U=19220/T:FOR N=0 TO 4
    :D=INT(U/2^N)
150 D$=RIGHT$("[SPACE4]"+STR$(D),6)+"
    [SPACE2]"
160 PRINT D$;:NEXT:PRINT:NEXT:PRINT#4
    :CLOSE 4
```

128 Bird Art: This gives an interesting display on the screen, plus some insight into the advanced use of sprites. It displays eight "birds" flying around on your screen.

Lines 130-150 draw ten-pixel-long lines at locations X and Y,

at angles stored in A and B. These become the flapping wings. Line 190 puts the sprites in motion. Lines 220-230 flap the wings, and line 240 jumps back to line 200 where the birds change their direction.

Changing the values of A and B will create a different effect.
Kevin Janzer
Address Unknown

```
100 REM 128 BIRD ART BY KEVIN JANZER
110 A=0:B=360:L=10:X=10:Y=10
    :DIM A$(50)
120 FAST
130 DO:COLOR 0,15:COLOR 4,15
    :GRAPHIC 1,1
140 DRAW 1,X,Y TO L;B:DRAW 1,X,Y TO L;
    A:SSHAPE A$(N),0,0,20,20:A=A+10
    :N=N+1
150 B=B-10:LOOP UNTIL B<0
160 L=1:DO:SPRITE L,1,1:L=L+1
    :LOOP UNTIL L>8
170 SLOW
180 GRAPHIC 0,1:L=1
190 DO:MOVSPR L,160,100:L=L+1
    :LOOP UNTIL L>8
200 DO
210 M=INT(RND(1)*360):FOR J=1 TO 8
    :MOVSPR J,M-(10*J)#5:NEXT
220 FOR B=0 TO N:SPRSAV A$(B),1
    :SPRSAV A$(B),2:SPRSAV A$(B),3
    :SPRSAV A$(B),4
230 SPRSAV A$(B),5:SPRSAV A$(B),6
    :SPRSAV A$(B),7:SPRSAV A$(B),8
    :NEXT
240 LOOP
```

Glare-free lighting: While remodeling my computer room, I discovered the perfect lighting system—glare free, and with adjustable brightness to suit both keyboarding and reading or other close-up work. Best of all, the total system costs under $30, including even the light bulbs.

My system is perfect for computers sitting on flat tables without overhead shelves or hutches, but it can be adapted to many other situations. It uses indirect lighting in "computer mode," and direct lighting in "reading mode."

The raw materials are two adjustable-arm lamps of the kind made by Luxo, Ledu and many others. They mount on a desk or table, and hold a single shaded bulb at the end of an adjustable swing-arm assembly consisting of four rods and four springs.

Lamps like this are available from many different sources—hardware stores, office supply stores, and contemporary furniture stores, to mention just a few. The expensive models cost over $50, but discount stores often have attractive ones for about $10. The bulbs are usually sold separately.

Choose your lamps based on style and price, but find a model rated to hold a 100-watt bulb. These usually have ceramic sockets, while the lower-rated units have sockets made of plastic. My 100-watt Ledus cost $12 each, and they'd be at home in the most luxurious office.

Put 100-watt bulbs in your lamps, then mount them behind your monitor, one on the right and one on the left. Mine are about nine inches to either side, where they don't interfere with other items on the desk.

The secret to glare-free operation is to use the lamps for indirect lighting. In computer mode, place them higher than your head and aim them toward the wall and ceiling. With a little experimentation, you'll find a position that gives ample light on your desk and keyboard, with little or no glare on your screen and no light source directly in your vision. Tighten their knobs until the lamps stay where you want them, and stand by for well-lighted glare-free computing.

While 200 watts of indirect light is fine for most keyboarding, it's not quite enough for serious reading or for looking closely at equipment. For those applications, turn one or both of your lamps around so they shine directly on the desk, and move the shaded bulbs closer to what you're working on. Two hundred watts direct incandescent light, up close and very personal, is more than enough for any computer room task.
Louis F. Sander
Pittsburgh, PA

Sight improver: If computing leaves you with tired eyes and fuzzy vision, have your sight checked by an eye doctor. I encountered this trouble myself, but put off having an eye exam because I had always had perfect vision. Finally I had my eyes examined, and sure enough, I needed glasses, but only for reading and computing. My glasses look good, they feel good, and most importantly they keep my eyes from blurring at the computer.

The eye exam itself was painless, inexpensive and interesting, and my insurance paid for most of it. Most of the work was done by a computerized auto-refractor, which does in one second what the doctor used to do in thirty minutes.
Louis F. Sander
Pittsburgh, PA

Slow disk loading: I use a Tymac CONNECTION interface with my 128 system, and it's one of my favorite pieces of equipment. One day two friends pointed out that it took my drives two minutes to load a program that their systems handled in twenty seconds! Directories in my word processor also took forever to load.

At first, I thought the problem was with my drives or in the computer itself, or maybe even a bad cable. But after swapping components with my friend's system, I discovered that the culprit was my interface. When I disconnected it, everything loaded quickly and accurately.

The problem was in the CONNECTION's SRQ line, which is used by the fast serial bus as a bi-directional fast clockline. The slow serial bus doesn't use it at all. To correct the problem, I removed the cover from the end of the interface connector and clipped the black wire from pin 1.

I'm not sure, but maybe this problem occurs with other interfaces too. If your system is very slow in the 128 mode, this could be the fix you need.
Marshall Freedland
Miami, FL

Rejuvenating cloth ribbons: When the ribbon gets kinky or fuzzy, but there's still lots of ink left, you can use a low-tech electrical device to rejuvenate it. Take the ribbon out of the cartridge, smooth it down and place it between two sheets of paper. Set an electric clothes iron on a low setting and iron the ribbon back to usefulness.
Steven Sellore
Saint John, N.B.
Canada

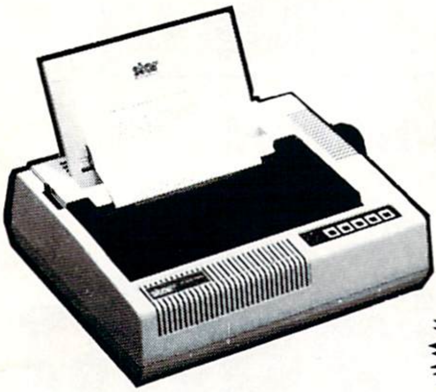
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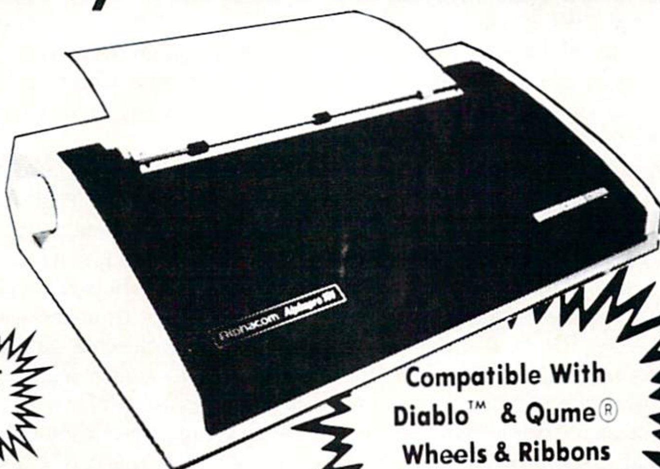
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The programs which appear in this magazine have been run, tested and checked for bugs and errors. After a program is tested, it is printed on a letter quality printer with some formatting changes. This listing is then photographed directly and printed in the magazine. Using this method ensures the most error-free program listings possible.

Whenever you see a word inside brackets, such as [DOWN], the word represents a keystroke or series of keystrokes on the keyboard. The word [DOWN] would be entered by pressing the cursor-down key. If multiple keystrokes are required, the number will directly follow the word. For example, [DOWN4] would mean to press the cursor-down key four times. If there are multiple words within one set of brackets, enter the keystrokes directly after one another. For example, [DOWN, RIGHT2] would mean to press the cursor-down key once and then the cursor-right key twice. Note: Do not enter the commas.

In addition to these graphic symbols, the keyboard graphics are all represented by a word and a letter. The word is either SHFT or CMD and represents the SHIFT key or the Commodore key. The letter is one of the letters on the keyboard. The combination [SHFT E] would be entered by holding down the SHIFT key and pressing the E. A number following the letter tells you how many times to type the letter. For example, [SHFT A4,CMD B3] would mean to hold the SHIFT key and press the A four times, then hold down the Commodore key and press the B three times.

The following chart tells you the keys to press for any word or words inside of brackets. Refer to this chart whenever you aren't sure what keys to press. The little graphic next to the keystrokes shows you what you will see on the screen.

SYNTAX ERROR

This is by far the most common error encountered while entering a program. Usually (sorry folks) this means that you have typed something incorrectly on the line the syntax error refers to. If you get the message "?Syntax Error Break In Line 270", type LIST 270 and press RETURN. This will list line 270 to the screen. Look for any non-obvious mistakes like a zero in place of an O or vice-versa. Check for semicolons and colons reversed and extra or missing parenthesis. All of these things will cause a syntax error.

There is only one time a syntax error will tell you the "wrong" line to look at. If the line the syntax error refers to has a function call (i.e., FN A(3)), the syntax error may be in the line that defines the function, rather than the line named in the error message. Look for a line near the beginning of the program (usually) that has DEF FN A(X) in it with an equation following it. Look for a typo in the equation part of this definition.

ILLEGAL QUANTITY ERROR

This is another common error message. This can also be caused by a typing error, but it is a little harder to find. Once again, list the line number that the error message refers to. There is probably a poke statement on this line. If there is, then the error is referring to what is trying to be poked. A number must be in the range of zero to 255 to be poke-able. For example, the statement POKE 1024,260 would produce an illegal quantity error because 260 is greater than 255.

Most often, the value being poked is a variable (A,X...). This error is telling you that this variable is out of range. If the variable is being read from data statements, then the problem is somewhere in the data statements. Check the data statements for missing commas or other typos.

If the variable is not coming from data statements, then the problem will be a little harder to find. Check each line that contains the variable for typing mistakes.

OUT OF DATA ERROR

This error message is always related to the data statements in a program. If this error occurs, it means that the program has run out of data items before it was supposed to. It is usually caused by a problem or typo in the data statements. Check first to see if you have left out a whole line of data. Next, check for missing commas between numbers. Reading data from a page of a magazine can be a strain on the brain, so use a ruler or a piece of paper or anything else to help you keep track of where you are as you enter the data.

OTHER PROBLEMS

It is important to remember that the 64 and the PET/CBM computers will only accept a line up to 80 characters long. The VIC 20 will accept a line up to 88 characters long. Sometimes you will find a line in a program that runs over this number of characters. This is not a mistake in the listing. Sometimes programmers get so carried away crunching programs that they use abbreviated commands to get more than 80 (or 88) characters on one line. You can enter these lines by abbreviating the commands when you enter the line. The abbreviations for BASIC commands are on pages 133-134 of the VIC 20 user guide and 130-131 of the Commodore 64 user's guide.

If you type a line that is longer than 80 (or 88) characters, the computer will act as if everything is ok, until you press RETURN. Then, a syntax error will be displayed (without a line number). Many people write that the computer gives them a syntax error when they type the line, or that the computer refuses to accept a line. Both of these problems are results of typing a line of more than 80 (or 88) characters.

"[HOME]" = UNSHIFTED CLR/ HOME
"[CLEAR]" = SHIFTED CLR/HOME
"[DOWN]" = CURSOR DOWN
"[UP]" = CURSOR UP
"[RIGHT]" = CURSOR RIGHT
"[LEFT]" = CURSOR LEFT
"[RVS]" = CONTROL 9
"[RVOFF]" = CONTROL 0
"[BLACK]" = CONTROL 1
"[WHITE]" = CONTROL 2
"[RED]" = CONTROL 3
"[CYAN]" = CONTROL 4
"[PURPLE]" = CONTROL 5
"[GREEN]" = CONTROL 6
"[BLUE]" = CONTROL 7
"[YELLOW]" = CONTROL 8
"[ORANGE]" = COMMODORE 1
"[BROWN]" = COMMODORE 2
"[L. RED]" = COMMODORE 3
"[GRAY1]" = COMMODORE 4
"[GRAY2]" = COMMODORE 5
"[L. GREEN]" = COMMODORE 6
"[L. BLUE]" = COMMODORE 7
"[GRAY3]" = COMMODORE 8
"[F1]" = F1
"[F2]" = F2
"[F3]" = F3
"[F4]" = F4
"[F5]" = F5
"[F6]" = F6
"[F7]" = F7
"[F8]" = F8
"[POUND]" = ENGLISH POUND
"[SHFT ^]" = PI SYMBOL
"[^]" = UP ARROW

GRAPHIC SYMBOLS WILL BE REPRESENTED AS EITHER THE LETTERS SHFT (SHIFT) AND A KEY ("[SHFT Q,SHFT J,SHFT D,SHFT S]") OR THE LETTERS CMDR (COMMODORE) AND A KEY ("[CMDR Q,CMDR G,COMDR Y,CMDR H]"). IF A SYMBOL IS REPEATED, THE NUMBER OF REPITITIONS WILL BE DIRECTLY AFTER THE KEY AND BEFORE THE COMMA ("[SPACE3,SHFT S4,CMDR M2]").

THE PROGRAM WON'T RUN!!

This is the hardest of problems to resolve; no error message is displayed, but the program just doesn't run. This can be caused by many small mistakes typing a program in. First check that the program was written for the computer you are using. Check to see if you have left out any lines of the program. Check each line of the program for typos or missing parts. Finally, press the RUN/STOP key while the program is "running". Write down the line the program broke at and try to follow the program backwards from this point, looking for problems.

IF ALL ELSE FAILS

You've come to the end of your rope. You can't get the program to run and you can't find any errors in your typing. What do you do? As always, we suggest that you try a local user group for help. In a group of even just a dozen members, someone is bound to have typed in the same program. The user group may also have the program on a library disk and be willing to make a copy for you.

If you do get a working copy, be sure to compare it to your own version so that you can learn from your errors and increase you understanding of programming.

If you live in the country, don't have a local user group, or you simply can't get any help, write to us. If you do write to us, include the following information about the program you are having problems with:

The name of the program
The issue of the magazine it was in
The computer you are using
Any error messages and the line numbers
Anything displayed on the screen
A printout of your listing (if possible)

All of this information is helpful in answering your questions about why a program doesn't work. A letter that simply states "I get an error in line 250 whenever I run the program" doesn't give us much to go on. Send your questions to:

Commodore Magazine
1200 Wilson Drive
West Chester, PA 19380
ATTN: Program Problem

Have fun with the programs!

HOW TO USE THE MAGAZINE ENTRY PROGRAMS

The Magazine Entry Programs on the next pages are two BASIC machine language programs that will assist you in entering the programs in this magazine correctly. There are versions for both the Commodore 64 and the Commodore 128. Once the program is in place, it works its magic without you having to do anything else. The program will not let you enter a line if there is a typing mistake on it, and better yet, it identifies the kind of error for you.

Getting Started

Type in the Magazine Entry Program carefully and save it as you go along (just in case). Once the whole program is typed in, save it again on tape or disk. Now RUN the program. The word POKING will appear on the top of the screen with a number. The number will increment from 49152 up to 49900 (4864-5545 on the 128) and just lets you know that the program is running. If everything is ok, the program will finish running and say DONE. Then type NEW. If there is a problem with the data statements, the program will tell you where to find the problem. Otherwise the program will say "mistake in data statements." Check to see if commas are missing, or if you have used periods instead of commas. Also check the individual data items.

Once the program has run, it is in memory ready to go. To activate the program type SYS49152 (SYS4864 on the 128), and press RETURN. You are now ready to enter the programs from the magazine. To disable the Entry Program, just type KILL [RETURN] on the 64 or SYS4867 on the 128.

The checksums for each line are the same for both the 64 and 128, so you can enter your 64 programs on the 128 if you'd like.

Typing the Programs

All the BASIC program listings in this magazine that are for the 64 or 128 have an apostrophe followed by four letters at the end of the line (e.g., 'ACDF). If you plan to use the Magazine Entry Program to enter your programs, the apostrophe and letters **should** be entered along with the rest of the line. This is a checksum that the Magazine Entry Program uses.

Enter the line and the letters at the end and then press RETURN, just as you normally would.

If the line is entered correctly, a bell is sounded and the line is entered into the computer's memory (without the characters at the end).

If a mistake was made while entering the line, a noise is sounded and an error message is displayed. Read the error message, then press any key to erase the message and correct the line.

IMPORTANT

If the Magazine Entry Program sees a mistake on a line, it **does not** enter that line into memory. This makes it impossible to enter a line incorrectly.

Error Messages and What They Mean

There are five error messages that the Magazine Entry Program uses. Here they are, along with what they mean and how to fix them.

NO CHECKSUM: This means that you forgot to enter the apostrophe and the four letters at the end of the line. Move the cursor to the end of the line you just typed and enter the checksum.

QUOTE: This means that you forgot (or added) a quote mark somewhere in the line. Check the line in the magazine and correct the quote.

KEYWORD: This means that you have either forgotten a command or spelled one of the BASIC keywords (GOTO, PRINT. .) incorrectly. Check the line in the magazine again and check your spelling.

OF CHARACTERS: This means that you have either entered extra characters or missed some characters. Check the line in the magazine again. This error message will also occur if you misspell a BASIC command, but create another keyword in doing so. For example, if you misspell PRINT as PRONT, the 64 sees the letter P and R, the BASIC keyword ON and then the letter T. Because it sees the keyword ON, it thinks you've got too many characters, instead of a simple misspelling. Check spelling of BASIC commands if you can't find anything else wrong.

UNIDENTIFIED: This means that you have either made a simple spelling error, you typed the wrong line number, or you typed the checksum incorrectly. Spelling errors could be the wrong number of spaces inside quotes, a variable spelled wrong, or a word misspelled. Check the line in the magazine again and correct the mistake.

```
10 PRINT"[CLEAR]POKING -";
20 P=49152 :REM $C000  (END AT
   49900/$C2EC)
30 READ A$:IF A$="END"THEN 110
40 L=ASC(MID$(A$,2,1))
50 H=ASC(MID$(A$,1,1))
60 L=L-48:IF L>9 THEN L=L-7
70 H=H-48:IF H>9 THEN H=H-7
80 PRINT"[HOME,RIGHT12]"P;
90 IF H>15 OR L>15 THEN PRINT
   :PRINT"DATA ERROR IN LINE";
   1000+INT((P-49152)/8):STOP
100 B=H*16+L:POKE P,B:T=T+B:P=P+1
   :GOTO 30
110 IF T<>86200 THEN PRINT
   :PRINT"MISTAKE IN DATA --> CHECK
   DATA STATEMENTS":END
120 PRINT"DONE":END
1000 DATA 4C,1F,C0,00,00,00,00,00
1001 DATA 00,00,00,00,00,0D,00,21
1002 DATA C1,27,C1,2F,C1,3F,C1,4C
1003 DATA C1,EA,EA,EA,4C,54,C0,A2
1004 DATA 05,BD,19,C0,95,73,CA,10
1005 DATA F8,60,60,A0,03,B9,00,02
1006 DATA D9,04,C1,D0,F5,88,10,F5
1007 DATA A0,05,B9,A2,E3,99,73,00
1008 DATA 88,10,F7,A9,00,8D,18,D4
1009 DATA 4C,EF,C0,E6,7A,D0,02,E6
1010 DATA 7B,4C,79,00,A5,9D,F0,F3
1011 DATA A5,7A,C9,FF,D0,ED,A5,7B
1012 DATA C9,01,D0,E7,20,2B,C0,AD
1013 DATA 00,02,20,74,C0,90,DC,A0
1014 DATA 00,4C,A9,C1,C9,30,30,06
1015 DATA C9,3A,10,02,38,60,18,60
1016 DATA C8,B1,7A,C9,20,D0,03,C8
1017 DATA D0,F7,B1,7A,60,18,C8,B1
1018 DATA 7A,F0,37,C9,22,F0,F5,6D
1019 DATA 03,C0,8D,03,C0,AD,04,C0
1020 DATA 69,00,8D,04,C0,4C,8E,C0
1021 DATA 18,6D,05,C0,8D,05,C0,90
1022 DATA 03,EE,06,C0,EE,09,C0,4C
1023 DATA CE,C1,18,6D,08,C0,8D,08
1024 DATA C0,90,03,EE,07,C0,EE,0A
1025 DATA C0,60,0A,A8,B9,0F,C0,85
1026 DATA FB,B9,10,C0,85,FC,A0,00
1027 DATA A9,12,20,D2,FF,B1,FB,F0
1028 DATA 06,20,D2,FF,C8,D0,F6,20
1029 DATA BC,C2,20,E4,FF,F0,FB,A0
1030 DATA 18,B9,08,C1,20,D2,FF,88
1031 DATA 10,F7,68,68,A9,00,8D,00
1032 DATA 02,4C,74,A4,4B,49,4C,4C
1033 DATA 91,91,0D,20,20,20,20,20
1034 DATA 20,20,20,20,20,20,20,20
1035 DATA 20,20,20,20,20,20,20,91
1036 DATA 0D,51,55,4F,54,45,00,4B
1037 DATA 45,59,57,4F,52,44,00,23
1038 DATA 20,4F,46,20,43,48,41,52
1039 DATA 41,43,54,45,52,53,00,55
1040 DATA 4E,49,44,45,4E,54,49,46
1041 DATA 49,45,44,00,4E,4F,20,43
1042 DATA 48,45,43,4B,53,55,4D,00
1043 DATA C8,B1,7A,D0,FB,84,FD,C0
1044 DATA 09,10,03,4C,84,C1,88,88
1045 DATA 88,88,88,B1,7A,C9,27,D0
1046 DATA 13,A9,00,91,7A,C8,A2,00
1047 DATA B1,7A,9D,3C,03,C8,E8,E0
1048 DATA 04,D0,F5,60,A9,04,4C,CA
1049 DATA C0,A0,00,B9,00,02,99,40
1050 DATA 03,F0,F0,C8,D0,F5,A0,00
1051 DATA B9,40,03,F0,E6,99,00,02
1052 DATA C8,D0,F5,20,96,C1,4C,12
1053 DATA C2,A0,09,A9,00,99,03,C0
1054 DATA 8D,3C,03,88,10,F7,A9,80
1055 DATA 85,02,A0,00,20,58,C1,20
1056 DATA 89,C1,20,ED,C1,E6,7A,E6
1057 DATA 7B,20,7C,A5,A0,00,20,80
1058 DATA C0,F0,D0,24,02,F0,06,4C
1059 DATA A8,C0,4C,CE,C1,C9,22,D0
1060 DATA 06,20,8D,C0,4C,CE,C1,20
1061 DATA BA,C0,4C,CE,C1,A0,00,B9
1062 DATA 00,02,20,74,C0,C8,90,0A
1063 DATA 18,6D,07,C0,8D,07,C0,4C
1064 DATA EF,C1,88,A2,00,B9,00,02
1065 DATA 9D,00,02,F0,04,E8,C8,D0
1066 DATA F4,60,18,AD,09,C0,69,41
1067 DATA 8D,09,C0,38,AD,0A,C0,E9
1068 DATA 19,90,06,8D,0A,C0,4C,1C
1069 DATA C2,AD,0A,C0,69,41,8D,0A
1070 DATA C0,AD,03,C0,6D,05,C0,48
1071 DATA AD,04,C0,6D,06,C0,8D,0C
1072 DATA C0,68,6D,08,C0,8D,0B,C0
1073 DATA AD,0C,C0,6D,07,C0,8D,0C
1074 DATA C0,38,E9,19,90,06,8D,0C
1075 DATA C0,4C,52,C2,AD,0C,C0,69
1076 DATA 41,8D,0C,C0,AD,0B,C0,E9
1077 DATA 19,90,06,8D,0B,C0,4C,67
1078 DATA C2,AD,0B,C0,69,41,8D,0B
1079 DATA C0,A0,01,AD,09,C0,CD,3C
1080 DATA 03,D0,20,C8,AD,0A,C0,CD
1081 DATA 3D,03,D0,17,C8,AD,0B,C0
1082 DATA CD,3E,03,D0,0E,AD,0C,C0
1083 DATA CD,3F,03,D0,06,20,CC,C2
1084 DATA 4C,4B,C0,98,48,68,4C,CA
1085 DATA C0,A9,20,8D,00,D4,8D,01
1086 DATA D4,A9,09,8D,05,D4,A9,0F
1087 DATA 8D,18,D4,60,20,A9,C2,A9
1088 DATA 81,20,DF,C2,A9,80,20,DF
1089 DATA C2,4C,D9,C2,20,A9,C2,A9
1090 DATA 11,20,DF,C2,A9,10,20,DF
1091 DATA C2,A9,00,8D,04,D4,60,8D
1092 DATA 04,D4,A2,70,A0,00,88,D0
1093 DATA FD,CA,D0,FA,60,END
```

END

```
5 TRAP 200
10 PRINT"[CLEAR]POKING -";
20 P=4864 :REM $1300  (END AT
   5545/$15A9)
30 READ A$:IF A$="END"THEN 110
80 PRINT"[HOME,RIGHT12]"P;
100 B=DEC(A$):POKE P,B:T=T+B:P=P+1
    :GOTO 30
110 IF T<>59382 THEN PRINT
    :PRINT"MISTAKE IN DATA --> CHECK
    DATA STATEMENTS":END
120 PRINT"DONE":END
200 PRINT:PRINT"DATA ERROR IN LINE";
    1000+INT((P-4864)/8):END
1000 DATA 4C,1E,13,4C,3A,13,00,00
1001 DATA 8E,00,F7,00,42,41,51,57
1002 DATA 0D,00,0D,43,08,14,0E,14
1003 DATA 16,14,26,14,33,14,A9,00
1004 DATA 8D,00,FF,AD,04,03,8D,12
1005 DATA 13,AD,05,03,8D,13,13,A2
1006 DATA 4A,A0,13,8E,04,03,8C,05
1007 DATA 03,60,AD,12,13,8D,04,03
1008 DATA AD,13,13,8D,05,03,60,6C
1009 DATA 12,13,A5,7F,D0,F9,AD,00
1010 DATA 02,20,5B,13,90,F1,A0,00
1011 DATA 4C,6F,14,C9,30,30,06,C9
1012 DATA 3A,10,02,38,60,18,60,C8
1013 DATA B1,3D,C9,20,D0,03,C8,D0
1014 DATA F7,B1,3D,60,18,C8,B1,3D
1015 DATA F0,35,C9,22,F0,F5,6D,06
1016 DATA 13,8D,06,13,AD,07,13,69
1017 DATA 00,8D,07,13,4C,75,13,18
1018 DATA 6D,08,13,8D,08,13,90,03
1019 DATA EE,09,13,EE,0C,13,60,18
1020 DATA 6D,0B,13,8D,0B,13,90,03
1021 DATA EE,0A,13,EE,0D,13,60,0A
1022 DATA A8,B9,14,13,85,FB,B9,15
1023 DATA 13,85,FC,A0,00,8C,00,FF
1024 DATA A9,12,20,D2,FF,B1,FB,F0
1025 DATA 06,20,D2,FF,C8,D0,F6,20
1026 DATA 79,15,20,A3,15,20,E4,FF
1027 DATA F0,FB,A0,1B,B9,EF,13,20
1028 DATA D2,FF,88,10,F7,68,68,A9
1029 DATA 00,8D,00,02,4C,B7,4D,91
1030 DATA 91,0D,20,20,20,20,20,20
1031 DATA 20,20,20,20,20,20,20,20
1032 DATA 20,20,20,20,20,20,91,0D
1033 DATA 51,55,4F,54,45,00,4B,45
1034 DATA 59,57,4F,52,44,00,23,20
1035 DATA 4F,46,20,43,48,41,52,41
1036 DATA 43,54,45,52,53,00,55,4E
1037 DATA 49,44,45,4E,54,49,46,49
1038 DATA 45,44,00,4E,4F,20,43,48
1039 DATA 45,43,4B,53,55,4D,00,C8
1040 DATA B1,3D,D0,FB,98,30,04,C9
1041 DATA 06,30,1E,88,88,88,88,88
1042 DATA B1,3D,C9,27,D0,13,A9,00
1043 DATA 91,3D,C8,A2,00,B1,3D,9D
1044 DATA 00,0B,C8,E8,E0,04,D0,F5
1045 DATA 60,4C,5C,15,4C,C5,14,A0
1046 DATA 09,A9,00,99,06,13,8D,00
1047 DATA 0B,88,10,F7,A9,80,85,FD
1048 DATA A0,00,20,3F,14,20,AE,14
1049 DATA 20,0D,43,84,FA,A0,FF,20
1050 DATA 67,13,F0,D8,24,FD,F0,06
1051 DATA 20,8F,13,4C,8F,14,C9,22
1052 DATA D0,06,20,74,13,4C,8F,14
1053 DATA 20,9F,13,4C,8F,14,A0,00
1054 DATA B9,00,02,20,5B,13,C8,90
1055 DATA 0A,18,6D,0A,13,8D,0A,13
1056 DATA 4C,B0,14,88,60,18,AD,0C
1057 DATA 13,69,41,8D,0C,13,38,AD
1058 DATA 0D,13,E9,19,90,06,8D,0D
1059 DATA 13,4C,CF,14,AD,0D,13,69
1060 DATA 41,8D,0D,13,AD,06,13,6D
1061 DATA 08,13,48,AD,07,13,6D,09
1062 DATA 13,8D,0F,13,68,6D,0B,13
1063 DATA 8D,0E,13,AD,0F,13,6D,0A
1064 DATA 13,8D,0F,13,38,E9,19,90
1065 DATA 06,8D,0F,13,4C,05,15,AD
1066 DATA 0F,13,69,41,8D,0F,13,AD
1067 DATA 0E,13,E9,19,90,06,8D,0E
1068 DATA 13,4C,1A,15,AD,0E,13,69
1069 DATA 41,8D,0E,13,A0,01,AD,0C
1070 DATA 13,CD,00,0B,D0,20,C8,AD
1071 DATA 0D,13,CD,01,0B,D0,17,C8
1072 DATA AD,0E,13,CD,02,0B,D0,0E
1073 DATA AD,0F,13,CD,03,0B,D0,06
1074 DATA 20,89,15,A4,FA,60,98,48
1075 DATA 68,4C,AF,13,A9,04,4C,AF
1076 DATA 13,A9,00,8D,00,FF,A9,20
1077 DATA 8D,00,D4,8D,01,D4,A9,09
1078 DATA 8D,05,D4,A9,0F,8D,18,D4
1079 DATA 60,20,61,15,A9,81,20,9C
1080 DATA 15,A9,80,20,9C,15,4C,96
1081 DATA 15,20,61,15,A9,11,20,9C
1082 DATA 15,A9,10,20,9C,15,A9,00
1083 DATA 8D,04,D4,60,8D,04,D4,A2
1084 DATA 70,A0,00,88,D0,FD,CA,D0
1085 DATA FA,60,END
```

END

Continued from page 95

```
 50 FOR X=1 TO 30:S$=S$+" ":NEXT
    :FOR X=1 TO 40:L$=L$+"-":NEXT'MVDN
100 W$="[CLEAR,SPACE11]
    WEEK1 WEEK2 WEEK3 WEEK4
    WEEK5"'BCXF
110 I$="NET INCOME"+S$'CELB
120 DATA SALARY,300,300,300,300,
    300'BBKD
130 DATA OTHER,0,50,0,50,0'BRIC
140 REM'BARY
200 ID=2:E$="[SPACE3]EXPENSE"+S$'DIBC
210 DATA CHURCH,35,40,35,40,35'BVCC
220 DATA RENT,0,0,0,575,0'BQXB
230 DATA FOOD,45,45,45,45,45'BTWD
240 DATA PHONE,0,25,0,0,0'BQAE
250 DATA LIGHTS,0,0,50,0,0'BRDF
260 DATA WATER,20,0,0,0,0'BQEG
270 DATA TRASH,8,0,0,0,0'BPQG
280 DATA GASOLINE,10,10,10,10,10'BXYJ
290 DATA CAR LOAN,0,133,0,0,0'BTGJ
300 DATA CAR INS,0,31,0,0,0'BRQB
310 DATA LIFE INS,13,0,0,0,0'BSPC
320 DATA BANK CARD,25,0,0,0,0'BTMD
330 DATA STORE CARD,10,0,0,0,0'BUNF
340 DATA SAVINGS,10,10,10,10,10'BWTG
350 REM'BARC
400 ED=14:D=ID+ED+10:DIM A$(D),A%(4,5)
    :A$(0)=W$:A$(1)=I$:S=2:F=S+ID-1
    :E=0'MEUR
410 GOSUB 30:T=Y:A$(Y+4)=E$:S=Y+5
    :F=S+ED-1:E=3'KCHM
415 GOSUB 30:TT=Y:A$(T)=" *FORWARD
    "'DMOL
420 A$(T+1)=L$:A$(T+2)=" TOTAL IN "
    :A$(T+3)=L$:A$(Y)=L$'HHJO
425 A$(Y+1)=" TOTAL EX "'CGKK
430 A$(Y+2)=L$:A$(Y+3)=" *BALANCE
    "'EPKJ
435 FOR X=0 TO 4:A%(2,X)=A%(0,X)+A%(1,
    X):Y=T'GDGQ
440 D%=A%(1,X):GOSUB 20:Y=T+2
    :D%=A%(2,X):GOSUB 20'GEQM
445 A%(4,X)=A%(2,X)-A%(3,X)
    :Y=TT+1'EBKP
450 D%=A%(3,X):GOSUB 20:Y=TT+3
    :D%=A%(4,X):GOSUB 20
    :A%(1,X+1)=A%(4,X):NEXT'JWXS
460 FOR X=0 TO D:PRINT A$(X);
    :IF X>22 GOTO 480'HRWM
470 NEXT:PRINT:GOTO 500'DFWH
480 GET K$:IF K$="" GOTO 480'EIBK
490 GOTO 470'BDKI
500 INPUT"0)STOP 1)REDISPLAY 2)SAVE
    3)PRINT";K:ON K GOTO 460,510,520
    :STOP'EQQN
510 SAVE"BUDGET":GOTO 500'CEWD
520 OPEN 4,4:FOR X=0 TO D
    :PRINT#4,A$(X):NEXT:CLOSE 4
    :GOTO 500'IWNK
```

END

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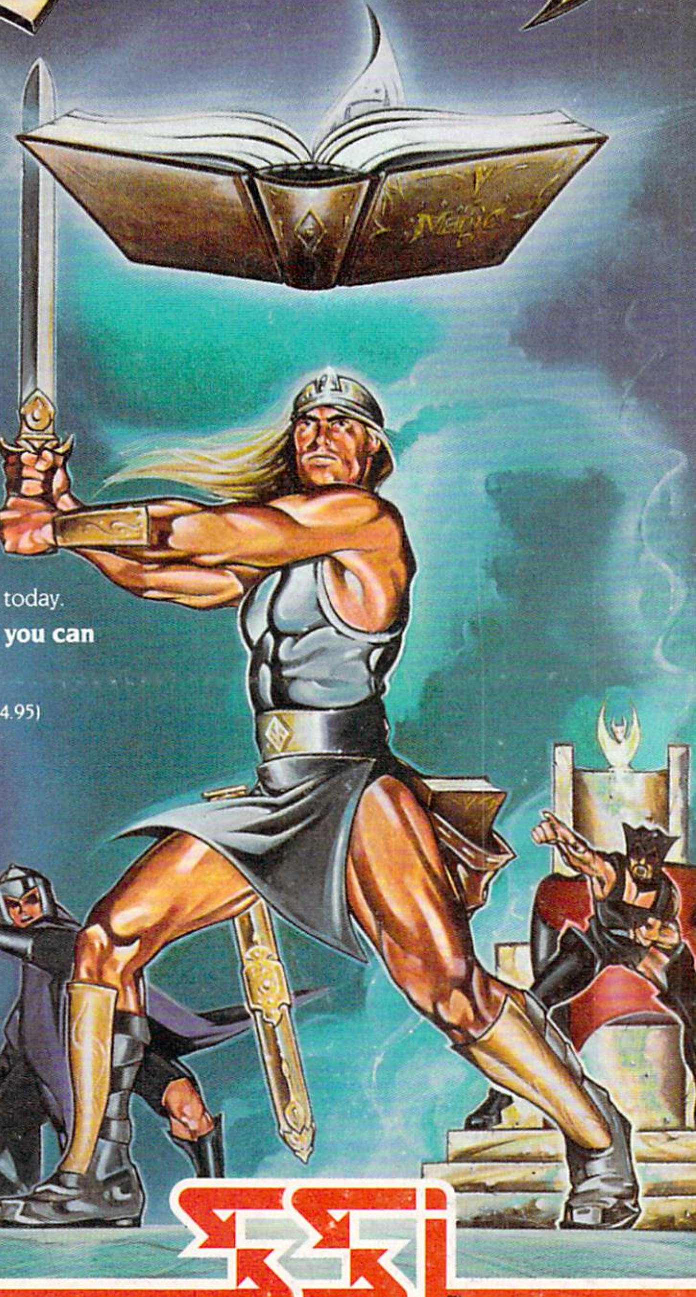
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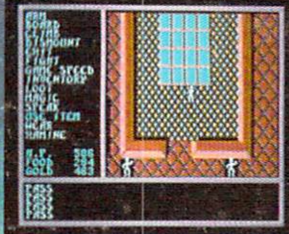
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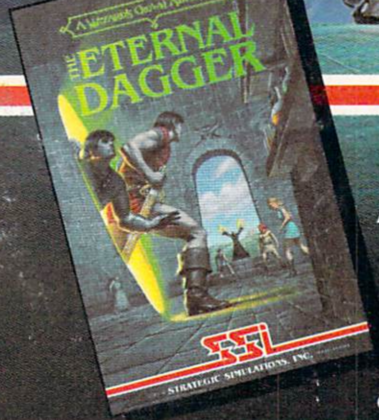


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